ORGANIZATIONAL LEARNING: CASE STUDY IN A HIGH-TECHNOLOGY CULTURE

by

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A thesis submitted in conformity with the requirements for the degree of Master of Arts
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ABSTRACT

The four-year journey of one high-technology organization to build a culture that values learning as a competitive advantage was studied. A company-wide survey and employee and manager focus groups were selected to collect data on the learning aspect of the culture. Three key elements of organizational learning were examined: leadership, rewards and recognition, and transfer of skills and evaluation. The research outcomes identify specific recommendations for change that can be applied to other organizations on similar journeys. Key outcomes include making the organizational vision accessible to all employees; increasing the level of comfort with taking appropriate risks; designing a process for the identification, selection and monitoring of employee development plans; and enhancing the coaching skills of managers.
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Chapter 1: Introduction

The purpose of this research is to identify gaps in, and links to, the theoretical learning models underlying one organization’s four-year effort to create an environment that values learning as a competitive advantage. The research will focus on three key dimensions: leadership, rewards and recognition and the evaluation of learning initiatives.

This case study offers a perspective from the high technology industry where the emphasis is on science and product development. This organization is involved in a number of joint-venture partnerships for the sale and distribution of its products, thereby adding an additional complexity to the culture, management style and organizational systems. The journey that this organization has embarked upon allows us to compare current theories on learning organizations with the practice of this company.

Organizational and Individual Learning

There is an abundance of definitions for learning and organizational learning which fall short of clarifying the characteristics of the terms. While all progressive companies aspire to being recognized as learning organizations, that label, although not always well understood, has become the new moniker for organizational excellence. I believe that Redding and Catalanello (1992) capture this best when they say:

It is common to refer to the “learning organization” as if it represents a certain type of organization, implying that it is possible to label certain firms as learning organizations and, at the same time, determine that others are not. In contrast, it
seems more useful to think of the learning organization as a model of strategic change. (p.48)

If we embrace the notion that adults choose to learn and then choose to make behavioural changes as a result of new knowledge or insights, then organizational learning is the sum of these individual choices which often promotes changes in systems, structures and culture. Behavioural changes requiring a shift in values and beliefs are lifelong journeys with many unexpected curves in the road. These significant changes require individuals to understand their mental models and have the skill and commitment to choose different paths. In Senge’s framework, mental models can be either simple generalizations or complex theories that define how we view the world and determine how we act (Senge, 1990).

The most practical definition of learning within organizations comes from Garvin: “A learning organization is an organization skilled at creating, acquiring and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights” (Garvin, 1993, p. 80). In this definition, companies that are learning organizations are able to pool, share and transfer individual learning among their members. To complete this thought, we turn to Gephart et al. (1996) who expand on the concept with:

It’s an organization in which learning processes are analyzed, monitored, developed, managed and aligned with improvements and innovation goals. Its vision, strategy, leaders, values, structures, systems, processes, and practices all work to foster people’s learning and development and to accelerate systems-level learning. (p.36)

Peter Senge (1990) describes organizational learning as the capacity of the organization to shape its future. He describes a learning organization as a place where
"people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together" (1990, p. 3). There are a number of authors (Bennett & O'Brien, 1994; Garvin, 1993; Kim, 1993) who similarly identify the characteristics of organizational learning.

Since organizational learning is the collective expression of individual behaviours, it is important to acknowledge the significant role that individual learning plays in bringing about strategic change. Kolb (1984) describes individual learning as "the process whereby knowledge is created through the transformation of experience" (1984, p. 38). He emphasizes that learning is a transformative process that is created and recreated, and not a static event.

**Leadership and Learning**

The leadership of an organization must actively support the change toward a culture that values learning as a way of becoming and remaining competitive in a global environment. Leaders can be either assets or obstacles to creating a value for learning and integrating that value into all other organizational systems. It takes courage to make space for learning activities that may not appear to be immediately relevant, in the face of the pressure on operational resources that generate tangible bottom line benefits. Leaders are most effective when they craft, communicate and live a vision of learning while finding mechanisms to enrol others. Not all leaders have “the ability to see beyond our
present reality, to create, to invent what does not exist, to become what we not yet are" (Covey, 1994, p.103).

Max DePree (1989) said it best when he described leaders as servants and debtors, and noted that the signs of outstanding leadership appear primarily among the followers. Other authors have provided clarity on the role of managers and leaders (Gerber 1998; Autry, 1991; Semler, 1993; Covey, 1990) in creating environments that value employees for their unique skills and contributions and aid in their development in ways that meet their individual needs along with the needs of the enterprise.

In a Fortune Magazine article, Warren Bennis describes the benefits of leaders with vision: “All the leaders I know have a strongly defined sense of purpose. And when you have an organization where the people are aligned behind a clearly defined vision or purpose, you get a powerful organization” (Bennis in Davis, 1994, p. 241).

All change efforts require a shared vision, communication of the vision, changes to the organizational systems and guidance from the champions. Shifting a technology driven culture to one that values learning, particularly non-technical learning, requires leaders with conviction, commitment, tolerance and patience.

**Rewards and Recognition and Learning**

The saying that “what gets rewarded gets done” (unknown) captures the power of reward and recognition programs in fostering a new value for learning and development.
Organizations traditionally design their plans in isolation of other strategic initiatives. And while most plans recognize the short-term financial performance, few reward performance in areas related to the "soft skills".

Rewards are usually tied to an assessment of performance outlined in the performance management program. This program attempts to "facilitate(s) the integration of various human resource activities, mesh(es) them more closely with the business objectives of the organization and thereby improve(s) overall performance" (Bevan & Thompson, 1991, p. 38). In most performance systems, objective-setting and performance appraisal are part of a process that includes an assessment, employee feedback, plans for the next period, on-the-job coaching and rewards for achievement (Bevan & Thompson, 1991).

Performance systems can also align individual performance and development with the goals of the organization. They can provide a catalyst for learning if the organization "walks the talk" (i.e. leaders say they value learning and allow employees to spend a minimum of 5% of their time in formal learning activities in addition to on-the-job learning). Goals that include skill development need to be equally weighted with operational goals and once attained, have similar financial value.

**Transfer of Learning, Evaluation and Learning**

Employees often return from a learning activity praising the session but then continue to perform in their jobs in the same manner as before. The task of turning new
skills into new performance is a challenge for all organizations. It is crucial for managers to ensure that learning is a key component of the organizational strategy. Participants need to see the link between learning events and their jobs. They need to be part of the planning process with their managers to select sessions that meet their interests and the company's needs. Managers need to discuss the learning objectives for the sessions and follow up after these sessions with a review of key points and a discussion about how the skills can be applied. The employee's work design should be adjusted to provide an opportunity for practising the new skills. Finally, the developmental efforts and success in the use of the skills should be monitored, supported and recognized. In addition to career development and performance enhancement activities, employees engage in numerous other types of learning endeavours such as discussion, reading, experimenting, computer and internet options, and reflection. These activities are more difficult to capture and support within the traditional training framework.

Many training departments fail to provide senior management with objective information related to the impact of major training initiatives. This weakens the ability of the learning group to access funding for future events and diminishes the impact of learning because of an inability to capture results as bottom-line improvements. Kirkpatrick (1998) developed a 4-level program evaluation model in common use within the training assessment field. This model can be supplemented with Phillips' (1997) 'return-on-investment' model to add a financial dimension to the evaluation. Evaluation of the impact of learning can be measured against five levels:

Level 1 - Reaction
A measure of participant satisfaction and intention to apply the skills.
Level 2 - Learning
A measure of transfer of knowledge or development of skill or change in attitude.

Level 3 - Behavior
A measure of change in on-the-job activity or application of the learning in real situations.

Level 4 - Results
The business impact achieved by program participants as they successfully apply the skills (changes in output, quality, costs, time, customer satisfaction etc.).

Level 5 - Return-on-Investment
Compares the monetary benefits of the program (value of improved efficiency, decreased turnover, etc.) with the program costs (trainer, venue, participant salaries, evaluation etc.).

Measurement plays an important role in validating the use of organizational resources for learning. While there is wide-spread agreement that there are many benefits to organizational learning such as improved effectiveness, increased satisfaction, reduced turn-over and enhanced attraction for potential hires, many executives today are at a loss to translate these benefits into bottom-line benefits: hence the need for rigorous evaluations on major initiatives.

PURPOSE OF STUDY
The purpose of this research is to document the progress of one organization’s effort to integrate learning into the natural course of business, and as a result realize a competitive advantage through an innovative, risk-oriented and satisfied workforce. This case study provides a unique and in-depth opportunity to follow events over a four year span and to identify gaps in, and links to, theoretical learning models as they relate to three key dimensions: leadership, rewards and recognition and the evaluation of learning
initiatives. The recommendations resulting from this examination will lay the groundwork for further study in specific aspects of organizational learning theory.

**Research Question**

The key question underlying this research is:

Does the experience of one organization’s process to incorporate the learning organization concepts mirror the theoretical models for organizational learning and leadership, rewards and recognition and evaluation?

**Significance of the Research**

There are three primary points of relevance for this research. One goal is to confirm, or identify gaps, in current organizational learning theories as compared to the practical experience of one organization as seen through the eyes of the employee and manager population. This comparison may provide executives and organizational development practitioners with additional insights about the design of a learning culture shift and the required systems, tools, structures and programs that are fundamental in making such a shift successful and enduring.

A second goal is to identify three elements which support learning (leadership, rewards and recognition, and evaluation) and test their presence or absence and the impact of that state. As many change agents know, there is tremendous value in understanding the subtle and more obvious influences that have an impact on change
efforts. By concentrating on three key elements, this case study may contribute to the increased rate of success of other cultural change initiatives both inside and outside the organization.

A final goal is to identify opportunities for further research related to the development of a practical learning framework for organizations with a specific focus on the systems that would support the ease of transformation.
Chapter 2: Review of Literature

2.1 LEADERSHIP AND LEARNING

The last decade has brought about much interest in leaders and leadership development. Leaders are different from managers whose roles are to plan, organize, control and monitor; they are seen as individuals responsible for creating visions and the changes needed to enact them (Kotter, 1996).

Senge et al (1999) distinguishes among three types of leaders. The local line leaders organize and manage the work of the organization; they are critical in that they can test the impact of new ideas and approaches. Internal networkers develop informal networks that spread new ideas across organizations. They have the ability to move about the larger organization and, through alliances with others, assist the local line managers by serving as brokers of contacts and supporters. “They are the natural seed carriers of new ideas and practices” (Senge et al., 1999, p. 19). Executive leaders are tasked with creating organizational environments that foster innovation and knowledge generation. This is accomplished through new infrastructures for learning, through support and inquiry, and by modelling the norms and behaviors. Leaders must abandon the objective of always having all the answers and accept that they need assistance to be effective.
Attributes of an Effective Leader

Effective leaders have a number of attributes that manifest themselves in their approach to running their businesses, the manner in which they respond to people and the way in which they integrate learning for themselves and others. There are endless definitions of leaders. The following four perspectives collectively provide a fairly comprehensive image of an effective leader, according to the literature.

McCall (1998) identifies a number of characteristics of good leaders: someone who acts with integrity, tells the truth and takes responsibility for his or her actions and seeks opportunities to learn, to do new things and has changed over time; someone who understands all facets of the business and how the various parts connect; someone who is insightful and can ask probing questions; someone who has the courage to take risks and will persevere in the face of opposition; someone who can form high performing teams, drawing the best out of each member and achieving consensus in the face of disagreement; someone who seeks and uses feedback; and finally, someone who learns from mistakes, responds to critique without getting defensive, and starts over after setbacks.

Kotter (1996) takes the position that lifelong learning builds and renews leaders. He defines good leaders by their ability to internalize the following mental habits: demonstrating a willingness to step beyond their levels of comfort; honesty evaluating of achievements and failures; relentlessly seeking information and ideas from others; actively listening; and having an open mind.
Senge et al (1999) believes that leaders need to possess multiple intelligences to manage large systems. He developed a system of levels of intelligence that become more difficult to access at the higher levels. Fiscal intelligence allows one to understand how the enterprise creates financial viability. Social intelligence allows a leader to choose the appropriate social form for the execution of the work and allows the leader to intervene effectively when necessary. Noetic intelligence is the capability for thinking and learning, particularly in groups. This requires patience, willingness to engage, and the skill of reflection. Emotional intelligence positively acknowledges emotions and is sensitive to subtle signals from others. Environmental intelligence allows one to pay attention to ergonomic factors in the workplace, what it feels like to work in that space. Spiritual intelligence provides a place where we can bring our whole selves to work. The latter three are not always evident in leaders in modern workplaces.

DePree (1989) believes that in organizations, leaders and followers yearn for trust, and that followers need to believe that their leaders will do what they say they will do. Followers have a reliable instinct about trust, and will be quick to identify behaviors and actions that are contrary to the stated commitments. Great things, including reaching our potential, are possible only when trust is present.
Obstacles to Effective Leadership

Cult of the hero-leader

There is a societal addiction to heroes seen in film, print and other media, as well as in organizations. Often, finding the hero-leader takes precedence over developing leadership capacity throughout the organization (Senge et al, 1999). Senge expands on this concept by discussing the myth of these leaders. The hero-leaders usually take drastic measures in the face of crisis to save or change the organization. This type of intervention does not allow for the personal or professional growth of the followers, who will persist in old behaviors in the face of coercion to change. The environment created by hero-leaders severely restricts the degree of risk that people are willing to take, and ultimately limits the innovative thinking that organizations require to sustain growth. These leaders perpetuate internal competition among team members vying for recognition.

In effect, the myth of hero-leaders creates a reinforcing vicious spiral of dramatic changes imposed from the top, and diminished leadership capacity in the organization, leading eventually to new crises and yet more heroic leaders. Worshiping the cult of the hero-leader is a sure-fire way to maintain change-averse institutions. (Senge et al, 1999, p.12)

Followers fearful of the responsibility for change or for resolving problems and removing obstacles are more than happy to pass the baton to the leaders who are presumed to have the “answers”. Block (1993) states that current theories on change management cling to a belief in leadership as the key. “It is this pervasive and almost religious belief in leaders that slows the process of genuine reform” (Block, 1993, p.5). His tenet is that “stewardship” rather than leadership provide the opportunity to chose
service rather than the pursuit of self-interest, which can give rise to reforming organizations.

Most leaders today come by their approach quite honestly; they have been rewarded for organizing and controlling things and may believe that the same techniques can be applied to people. Even the term “human capital” suggests an attempt to reduce human beings to assets that can be valued like real-estate holdings. Leaders are measured by their efforts and loyalty, which often comes with a high personal price. They are recognized for their brilliance even when it intimidates others and limits the levels of contribution and participation. Their charisma can be used to manipulate others. (McCall, 1998). This type of success can blind a person to the need to adapt, learn and change and will surely stunt the development of those working with such leaders.

While we can understand how and why our leaders developed certain styles of interacting and getting the job done, hero-worship is a daunting obstacle to overcome. However, companies can no longer afford to support environments that stifle participation and creativity, that do not let people be responsible and accountable, that curtail growth and development. These organizations are doomed to failure over the long-term.

*Need for direction*

Transformation cannot take place in the absence of direction. “Whenever you cannot describe the vision driving a change initiative in five minutes or less and get a
reaction that signifies both understanding and interest, you are in for trouble” (Kotter, 1996, p. 9). Having a vision is often not enough if people perceive that there are huge obstacles in their paths. Leaders often send people mixed messages about their roles in a change process, because they are unclear themselves about the end goal, and how to enroll people in the process of realizing these goals (Kotter, 1996). Confusing signals increase anxiety, a natural inhibitor to learning, and drastically slow the change process for the individual and the organization. Unfortunately, leaders who have managed in a traditional hierarchy for much of their careers often find the switch to a more open and participative approach a very difficult journey which many cannot complete.

Dependency

Block (1993) introduces the notion of dependency as key to understanding traditional leadership models. In order for dependency to take root there must be a belief that the people in power know what is best for others. Dependency allows followers to hold leaders personally responsible for how they feel about themselves and for their view of the degree of freedom that is available to them. “Dependency is the collusion required for patriarchy and parenting to endure...”(Block, 1993, p.8).

The coin of dependency has an opposite side, and that is the wish for dominance. Claiming control over others who are adults is also a choice. We may think that they are not ready to exercise their freedom, but this is mostly our rationalization. Dominance fulfills the wish to be in control. It may take the softer guise of being the all-knowing, omniscient, loving parent. Or you may see it as being a strong leader, giving people structure, clarity, and something to lean on and react to. These are all indirect forms of staying on top. (Block, 1993, p. 79)
By maintaining dependency, people will choose to be passive and silent, effectively waiting to be told when and how to contribute. Learning is stifled by leaders who can only achieve co-operation through control.

Creating the Culture

Enduring personal changes requires us to understand how we came to hold our values and beliefs, to challenge these and hopefully to emerge with a deep understanding of our evolutionary process. From this new insight comes the opportunity to select or modify our values and beliefs, and to review our behaviour for any gaps between what we believe is critical and how we react and interact with the world. Leaders are most credible in the role of mentors and coaches when they either have experienced, or are on the journey of, personal transformation. These leaders are well positioned to model and encourage a value of learning and growth in their organizations.

Since we spend most of our waking hours in our jobs, organizations should provide a safe place for learning. People need a supportive environment in which to take risks and experiment with new behaviors, to receive encouragement from their boss and colleagues and to know that they are not alone in the change process.

In order for leaders to promote personal and professional growth for others, they must first be able to access this growth for themselves. McCall (1998) states that executive development faces a number of challenges. First, the selection of executives should be based in large part on evidence that these individuals have the ability to learn.
Second, there are no guarantees that a person, when placed in a developmental opportunity, will learn what needs to be learned. Third, given the limited number of opportunities for growth, there is tension between selecting people who have shown that they will succeed versus people who would benefit most from the experience. This point ties into the degree of risk that organizations can tolerate and the acceptance of mistakes as learning opportunities. The underlying factor for success is a well-established input and feedback mechanism that allows for constant corrections in the course.

Kotter (1996) adds to McCall’s position by focusing on lifelong learning, and believes that leadership potential is developed over the course of a career. He believes that potential will only be realized if the climate fosters development. Many organizations, because of their culture, destroy potential and repel people who stretch outside of the acceptable and predictable norms.

**Empowerment**

Many of the same type of organizational characteristics required to support leadership development are also needed to foster empowered employees. Those characteristics include flatter hierarchies, less bureaucracy, and a greater willingness to take risks. Leaders are best able to create and nurture such a climate when they have shifted most managerial responsibilities to lower levels (Kotter, 1996).

Block (1993) refers to “empowerment” as a belief that the solutions to our issues and problems lie within each of us, and therefore we all sign on for the job of fixing the
problem. "Empowerment bets that people at our own level or below will know best how to organize to save a dollar, serve a customer, and get it right the first time" (Block, 1993, p. 9). Benevolent leaders who seek to protect their people are claiming sovereignty, which precludes the presence of ownership and responsibility. Followers should not be the vehicle through which leaders fulfill their expectations for security, self-esteem, and freedom because it is not the followers to give but the leaders' to claim (Block, 1993).

An empowerment style of management creates more innovation, initiative, and commitment, but also more unpredictable behaviour. Managers must weigh the benefits of an empowerment style against the predictability of high control. To talk empowerment but practice control only creates cynicism. Few managers are willing to really pay the price of empowerment through the win/win agreement process - where desired results and guidelines are clearly established, available resources are identified, and specifics of accountability and consequences are agreed upon. Those managers who do pay the price unleash the potential of people, foster innovation and initiative through self-supervision that respects the individual, and produce desired results in a way that is both tougher and kinder than a high-control style. (Covey, 1990, p. 184)

*Fostering trust*

“When things go awry, trust powers the generators until the problem is fixed” (DePree, 1997, p. 124). DePree is very eloquent in his discussion of trust. He states that trust cannot be demanded or forced by the leaders, but is given by the followers only when their high standards have been met. Once trust is given it must continue to be earned. Trust starts with a personal commitment to respect others and to acknowledge and integrate the strengths and interests of others to reach common and individual potentials. Trust is willingly given to leaders who keep promises, consistently and predictably do the right thing, demonstrate their competence and help followers understand where they fit into the overall picture.
Kotter (1996) contends that major change is impossible without the help of others, and that the need for consistent and open communication will increase a sense of comfort with change and see people through shaky times. A real danger is a mismatch between the boss' behaviours and espoused values. “People do not expect perfection, but they recognize sincerity and openness and their absence. When a local boss relapses from a style of open inquiry into authoritarian behaviour, the repercussions can be felt for months” (Senge et al, 1999, p. 195).

The absence of trust often results in debilitating anxiety and fear, virtually paralysing all but the safest actions and decisions. Senge (Senge et al, 1999) presents a prescription for overcoming fear and anxiety, by removing the obstacles to openness and by accelerating the development of safety and the capacity for openness. Start small and build success before confronting difficult issues. Model openness and avoid frontal assaults that will threaten and curtail participation. Learn to see diversity as an asset and ensure that people sense that they are valued. Use mistakes as opportunities for learning by removing the stigma attached to failure. Ensure that participation in change efforts is a matter of choice, not coercion. Develop skills of openness and inquiry and help others also acquire these skills. Develop a common understanding of the vision and current reality, and be patient when fear and anxiety manifest themselves, they are natural responses to change. Once people believe that their leaders can be trusted to support new values, they will be more prepared to take risks (Senge et al, 1999).
Structure and systems

The bravest vision and the clearest strategies alone cannot guarantee success. Leaders must be rigorous in their examination of their systems and structures and remove practices that reinforce behaviours that do not support the direction. Many authors refer to this as aligning the organization’s systems and structures with the overall mission of the enterprise. Misalignment often results in stress for the employees who finds themselves operating in a fog of conflicting signals. The ultimate objective is to find the balance between high effectiveness and profits, and low stress. Such a state is ripe for risk, experimentation and learning.

Covey (1990) refers to six systems that leaders must juggle to preserve the organizational equilibrium: internal and external information to support decisions; compensation and recognition; training and development; recruitment and selection; job design and communication. Align these systems with the vision, communicate constantly and consistently in word and deed and people will choose to vigorously contribute to realizing the organization’s goals and, in the process, may find that they have also realized their dreams.

Conclusion

It perhaps is helpful to think about effective leadership with a naval analogy. The captain of a ship only reaches this position after years, even decades, of sailing under the command of more experienced officers in a variety of open waters in differently configured vessels. At the end of this apprenticeship she has learned to read the subtle
signals of the sea, would not for a moment imagine that she can tame it, and honours it with the deepest respect and even love. Because of this intimate knowledge, she brings insight, determination and wisdom to this role. Observers are in awe of her skills and seek unsuccessfully to define them. The captain sails to meet her own needs and, in return for the privilege and pleasure, prepares others to assume the command. She brings an unshakable faith in the desire of her crew to perform at their peak and rise to the challenge presented by nature. The captain navigates her ship through calm and stormy weather, knowing the direction and constantly adjusting the course to reach the ultimate destination. She is open to detours in the route to ensure safety or to provide new challenges and learning opportunities. She prepares her people to be adaptable and responsive to change, and instills a sense of self-discipline that supports the freedom to assume responsibility and the willingness to be held accountable.

2.2 REWARDS AND RECOGNITION AND LEARNING

It would be reasonable to expect that, with the continued focus on developing learning organizations, there would a proliferation of literature on how to design and manage compensation systems that encourage individual, team and organizational learning. A review of the literature reveals a lack of resources on this topic and presents an opportunity for further study.

Rewards and recognition either serve as motivators or, most often, as demotivators. This stems from a number of factors: the lack of clarity about what performance objectives should be and how they can be designed to leverage learning
opportunities; a lack of congruence between what the compensation systems say they reward and what they actually do reward; and a low priority placed on the intangible rewards that often have more impact than the financial rewards.

The literature is consistent in reporting the need for aligning reward and recognition programs with other factors that contribute to the shaping of a learning culture such as leadership, communication, career development and succession planning. What is absent is a discussion of concrete and practical approaches to designing rewards and recognition programs with a view to promoting learning. In this context, learning captures a variety of activities: on-the-job learning; formal training and the transfer of skills to the workplace; coaching and mentoring; and sharing personal insights about what motivates people to act in certain ways, and the resulting impact of those choices.

Perhaps part of the challenge in finding such resources lies in the fact that much of the most profound learning an individual or team can engage in is very personal and often humbling, and not always easy to capture. A manager cannot write a learning objective for an employee that requires him or her to: “develop insight on the impact of your communication style by November 30”, and expect profound changes to occur unless he is prepared to actively support and coach his employee. We cannot always predict what will give rise to a learning opportunity, and in the true spirit of the learning organization models, managers and employees need to look for learning in the natural course of managing the business.
In *Teaching Smart People How to Learn*, Chris Argyris (1998) refers to “single loop learning” where we focus on correcting errors in the external environment, compared with “double loop learning”, which is added to the first loop, and involves reflecting on our own behaviors to identify changes to improve future interactions. This concept presents tremendous developmental opportunities for individuals and organizations. A critical part of learning is the ability to understand what motivates behaviour, and to be willing to share this information with your team for the sake of deeper understanding and improved working relationships. Becoming skilled at double-loop learning involves the continuous analysis of current behaviour to understand the underlying very personal human needs, and then actively engaging in changing motivations and behaviours to enhance the quality of relationships. Another profound concept in learning is recognizing the lack of congruence in behaviour between “espoused theory”, or acting in accordance with stated values and beliefs, and “theory in use”, or the way people actually act (Argyris, 1998; Senge, 1990). A typical example would be an espoused theory that says that customer satisfaction is a fundamental value, while the reward programs only reward cost cutting measures. Employees in this situation quickly identify the true value and will tailor their performances accordingly. Reward and recognition systems will only be effective if they measure what is critical to the business and if the measurement criteria is aligned with the stated goals of the organization.

If we believe that this type of learning, in addition to other traditional and non-traditional activities, has value, then the challenge becomes setting performance targets
aimed at capturing and rewarding instances of learning and the sharing of insights with others. The outcomes of newly developed insights can be profound for the individual, team or organization, and can be good catalysts for creating a safe environment for vulnerability and experimentation.

Senge (1999) provides more specific advice for the design of learning incentives. He believes that what people have learned can be captured in the “results of change” and that they can then be measured and rewarded by organizations. He advocates creative approaches to incentives and feels that such programs are best designed and promoted by executives who are prepared to commit financial resources to recognizing and encouraging change. Managers can only reward the results of change if employees have direction and share in the process of selecting learning avenues to explore. It would be difficult to provide encouraging feedback unless managers know about the growth aspirations of their employees. Organizations need to establish incentives that are flexible enough to reward progress, thereby giving attention to the process as well as to the outcomes. Not all growth initiatives lead to predictable results, and recognizing unanticipated successes plays a large part in fostering a learning environment. Imagine the message sent to employees if organizations marginally recognized repeated risk-free performance but rewarded mistakes that generated new insights, knowledge and/or attitudes. Not all successes provide developmental opportunities.

There are a number of obstacles in the design of rewards that can limit the degree of organizational change: rewards based on individual contribution do not encourage
people to acknowledge and support team interdependencies; there is often a lack of congruence between what organizations say is important and what they actually measure and reward; and the continued focus on short-term results leaves little room for mistakes, risk and collaboration.

The design of pay systems is a complex undertaking that evokes substantial emotion. It strikes at the heart of the designer’s valuing of people and the beliefs they hold about the capacity of people to grow and change. Rosabeth Moss-Kanter (1989) states that one of the most significant shifts in pay design is the move from systems based upon status, i.e. continued support for the hierarchy, to ones based upon contribution linked to achieving learning objectives. The latter has many positive features including increased fairness, keeping fixed costs low, and achieving higher productivity through specific goals. The cost of these benefits, however, stems from the choices required of the leadership in the design of the system such as: rewarding individuals or groups; rewarding company or unit performance; discretionary (by managers) or automatic (linked to specific goals) distribution; one system for the whole company or different systems for different units.

In his book “High Flyers: Developing the Next Generation of Leaders”, Morgan McCall (1998) defines development as a continuous learning process facilitated by job assignments and rotations, coaching and mentoring, and formal courses, to name just a few options. He states that barriers to learning result from inadequate goals, incentives and resources, and notes that organizations should ensure that rewards are consistent with
the culture. More organizations need to use individual learning goals as an aid to organizational growth, provided that the individuals are held accountable for their performance in relation to these goals. Because of the focus on the tangible influences of profits such as tools, vendors/suppliers and staffing decisions, intangible influences such as learning do not take a high priority. Only organizations that set specific learning goals tied to business priorities, and attach to the results of these objectives meaningful recognition and rewards, will capture organizational growth through individual development. In the absence of incentives tied to learning and development, organizations should turn to promotion and succession practices to reward learning over the longer term.

In a recent model developed by Horibe (1999), the author describes a process to “encourage new knowledge” which is a key method of rewarding learning. It can be accomplished by ensuring the following: that employees understand the role they play in realizing the business goals; supporting effort and work on projects that are not fully accepted by management; listening to and understanding what people are saying; stopping activity on things that are not working; accepting failure; rewarding the admission of mistakes and the resulting insights.

Learning initiatives need to take the form of a partnership with clear expectations of the organization to provide opportunities or facilitate the process. There should be no rewards for learning activities such as attendance at courses, but significant rewards for applying and sharing new skills and knowledge. Horibe contends that rewards for
knowledge use are usually intangible and are reflected in the enhanced roles and challenges provided to the learners. Time to learn, new tools and other resources are often more valuable than financial incentives. Leaders would be most effective in creating a culture that values learning if they concentrated on providing honest encouragement, taking an interest in the things that employees care about, and supporting characteristics rather than activities. This creates a cycle of support for those hungry to grow, eager for change and willing to influence their peers, units and organizations.

Continuing with the notion of encouragement as a key incentive for learning, Kouzes and Posner (1995) identify five practices that leaders should implement to “encourage the heart” of their people. These practices help leaders recognize and reward others: building self-confidence through setting high expectations to bring out the best in people; connecting performance and rewards so people know what is expected and how they will participate in the process and receive and give feedback on progress; employing a variety of rewards such as intangible rewards (providing challenge, a chance to create, listening carefully, helping, giving credit in front of others) and tangible rewards (financial, promotion); and being cautious about using them in concert for fear of negating the impact of the intangible rewards. The last point made by Kouzes and Posner emphasizes the limited use of tangible rewards, primarily financial, and the potential of these rewards to work against each other. In other words, if a situation is already intrinsically rewarding, adding an extrinsic reward provides very little, if any, added benefit. The authors, in their recent text (1999), refer to a famous work done by Lindahl
in 1949, which found that employees rank intangible rewards, such as feeling appreciated and being listened to, the highest.

In summary, all authors agree on the critical need to align recognition and reward practices with the needs of the business, and that systems must be developed as frameworks for setting clear learning goals, defining the feedback loop and encouraging growth and development at all levels of the enterprise. Unfortunately, there is little direction on how that can be accomplished from the literature. The authors are unanimous on the positive impact of providing intangible rewards to employees who model personal growth and serve as coaches to, and role models for, others. Complex pay systems do not have the capability to fulfill the basic human need to be appreciated and feel valued, and performance appraisal systems are typically expected to make up for the absence of regular, clear and honest communication about daily decisions and actions. Certainly, by the account of employees in organizations, these systems are sadly missing the mark in creating a learning environment. Managers may be most effective in supporting organizational learning and change by constructing relationships with their peers and employees that are concerned with the whole person, thereby accessing, and hopefully liberating, each person's potential in the process of preparing the enterprise for the future.

2.3 TRANSFER OF SKILLS, EVALUATION & LEARNING

One of the key elements in the transfer of skills to the job or the use of learning tools and processes is the degree to which these new behaviours will be utilized to
accomplish the objectives of the enterprise. One of Kirkpatrick’s (1998) four conditions for behavioural change after training is that “the person must work in the right climate”. The right climate refers to the relationship an employee has with his or her manager and the level of support received from the manager in the use or practice of new skills or behaviours. It is very common to observe a person leaving a learning activity eager to use a new skill, only to meet up with resistance on the part of the manager, leading to the setting aside of this new knowledge. Not only does the employee lose an opportunity for continued growth, but the work team may not be exposed to new ideas and ways of working that would further both team and organizational goals.

In Kirkpatrick’s model (1998, pp 21-22), there are five different types of climates that an employee may face. He described them as preventing, discouraging, neutral, encouraging and requiring. A manager who prevents the use of new skills or knowledge simply removes the possibility of practice or discussion for the employee. A discouraging manager makes it clear in subtle and obvious ways that any changes on the part of the employee would not be well received. A neutral boss has no objections to the practice of new skills, providing it does not get in the way of getting the job done. The encouraging manager shows interest in the employee’s development and takes an active role in helping the employee transfer the skills to the job. The “requiring” manager is a partner with the employee in the learning process; he is aware of the context of the learning activities and measures the employee’s progress in the use of the skills in the workplace.
Since the manager plays such a crucial role in the application of the new skills on the job, it is crucial that organizations prepare their managers for this role to maximize the opportunity for companies to reap the benefits of sponsored learning activities that are critical to their financial viability. Employees who are continually frustrated in their attempt to apply new skills will soon make the decision to abandon any attempts at development, resulting in a loss for both the organization and the individuals. One of the methods of supporting the transfer of skills is to conduct regular and thorough evaluations, thereby capturing everyone's attention. This will be most effective if these reviews are developmental rather than judgemental as are most performance reviews.

The importance of evaluating learning becomes apparent in considering the various definitions of the learning organization, such as Garvin's (1993, p.80): "a learning organization is an organization skilled at creating, acquiring and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights". Without a regular method of assessing an organization’s incremental progress toward these venerable goals, it is difficult to know how, where and when to best modify behaviours to influence their attainment. An organization that regularly stops to determine whether it is on the right course will undoubtedly get there faster, using the information it gathers to adjust its course along the way. It is through this "temperature taking", reflecting on past and current states, that an organization can achieve the benefit of what Senge (1990) describes as organizational learning: the capacity of the organization to shape its future.
A key way to assess progress along the learning organization’s journey is to evaluate the impact of learning initiatives. By evaluating the impact of learning programs, technical and non-technical training, outcomes of organizational development (OD) initiatives, an organization can determine the effectiveness of its efforts and the return on its investment. It can determine if the desired outcomes of training are being achieved, and if learning is taking place. Thorough impact assessments provide invaluable information on the potential barriers to learning and skills transfer that can help facilitate the success of future learning initiatives. In this way, OD impact assessments provide a useful opportunity for the OD function to guide the learning organization’s journey.

While much has been written on the theory and practice of evaluating learning and programs from an educational perspective (see Worthen & Sanders, 1987, for a comprehensive review), significantly less has been written about workplace learning assessment. Industry can apply many of the tenets and techniques that have been found useful in educational assessment, however. For example, organizations undergoing a shift to a learning culture might borrow from Rippey (1973), who used the term 'transactional evaluation' to draw attention to the effects of disruptions in an organization on incumbents in the process of change. Rippey believed that through transactional evaluations, organizations could identify and remove the obstacles to the change process and thereby minimize the natural resistance and reduce the inherent conflicts that emerge as people navigate their way through a transition. Rippey’s model suggests that
continuous evaluation of changes, by both the supporters and detractors, creates a dialogue that may resolve conflicts about the consequences of organizational changes.

Senge (1990) translates this notion into the organizational systems archetype of "limits to growth", a naturally occurring phenomenon characterized by a reinforcing process that creates a spiral of success but also creates inadvertent secondary effects which eventually slow down the success. The management principle he advocates to facilitate organizational development is to remove the factors limiting growth, rather than pushing the growth. Thoughtful evaluation efforts permit identification and, ideally, removal of such barriers to growth and learning as they arise, ultimately facilitating organizational development more efficiently than pushing programs through blindly.

Despite the obvious wisdom of evaluation pauses, organizations rarely undertake measuring the impact of their development initiatives in any depth. One of the main reasons for this is that this level of analysis is traditionally not required or expected by senior management.

Organizations, as they prepare themselves for business in the new millennium, are complex entities with diverse challenges from driving for profits, managing investor perception, meeting shareholder expectations, coping with the rapid changes in the e-community, responding to the needs of employees, fighting the war for talent, and behaving as responsible citizens. It is then easy to understand that the evaluation of
training and activities does not rank as a high priority, thereby posing a challenge for OD practitioners.

Over the past few years, evaluation has become a business focus, as the costs of providing training are escalating. Boards and executives must now show a return-on-investment for their training dollars. In times of economic pressures, there are usually many needs for a limited budget and only those with a clear link to increasing profitability will be approved. In addition, operating expenses are scrutinized more closely in an effort to economize in all possible areas. The human resources function, traditionally labelled as a cost centre, is under new pressure to become a business partner and profit centre, and to measure its programs and services in a manner similar to other functional areas. The ability to measure the impact of human resources programs greatly increases the credibility of the function and the willingness of the executive to continue to provide financial support. Many organizations grapple with methods and approaches to measure the results of training. In a survey of 35 members of the International Federation of Training and Development Organizations, measuring return on investment was consistently rated the hottest topic among members of those organizations (Phillips, 1996).

In selecting an evaluation framework, managers look for ease of use, automation, ROI formula that are similar to those used in the other aspects of the business, and quantifiable results. "They need a process that they can explain to others, if necessary. More importantly, they need a process with which they can identify, one that is sound
and realistic enough to earn their confidence” (Phillips, 1997, p.7). Another reason
learning impact has not been routinely assessed, is that the process of calculating it is
little understood outside of a small segment of human resources professionals. Even
practitioners with this functional orientation have found the process to be cumbersome
and time consuming, particularly in departments with limited resources and high external
demands. Trainers rarely venture into the realm of conducting evaluations at the level of
return-on-investment, and are satisfied with measuring trainee satisfaction.

Human resources development can be characterized as training for job-related
skills, education in preparation for the next job, or larger scale development initiatives
designed for cultural change (Nader and Wiggs, 1986). According to this definition,
training has a short time frame for observable payback and represents a low risk:
education has a medium time frame for payback and represents a moderate risk; and
development has a long time frame for payback and consequently represents higher risk
in terms of payback. It is easy to understand why organizations traditionally place
greater emphasis on training where the risk is low and the payback is quick.

The return on investment for short term training programs is easier to capture with
the ROI process. It is more difficult to attain the ROI in educational programs
because of the extended time for payback and because other intervening variables
may enter the process. Developmental programs are the most difficult for ROI
application because of the long-term focus and the full range of variables that may
enter the process and complicate the linkage with the performance change.
(Phillips, 1997, p.11)

While human resources professionals understand the need for program evaluation,
what they have lacked is a systematic and straightforward procedure for determining and
communicating the return on training investment. This has kept even these professionals from pushing the issue within their organizations.

In the mid 1970's, Kirkpatrick developed the four-level training evaluation model previously mentioned, that has since become the industry standard. The four levels are conducted in sequence, with each level setting the groundwork for the next. Each level brings an added degree of complexity and time, and results in richer information. The four levels are: Level 1 - Reaction, Level 2 - Learning, Level 3 - Behaviour, and Level 4 - Results.

A reaction evaluation captures the level of satisfaction on the part of the trainees. Results may determine if the program will be repeated, but do not provide information on whether or not the skills will be applied. The learning evaluation assumes that specific objectives and outcomes were established for an initiative, and this level of evaluation measures the extent to which participants change attitudes, improve knowledge, and/or increase skill as a result of attending the program. The behaviour evaluation determines the degree of changes in behaviour resulting from a training program. The results evaluation captures quantifiable changes related to business objectives such as increased production, decreased defects, reduced injuries, etc. Kirkpatrick suggests that, for programs dealing with content such as conflict management, communication and leadership, training professionals measure outcomes in terms of non-financial measures such as increased morale and cultural shifts, and that these measures will result in the tangible outcomes desired (Kirkpatrick, 1998).
The ROI process adds a fifth level to Kirkpatrick's four levels of evaluation. Developed by Phillips in 1997, an ROI measurement compares the program's monetary benefits with the program costs. Although the ROI can be expressed in several ways, it is usually presented as a percent or cost benefit ratio. The evaluation cycle is not complete until the Level 5 evaluation is conducted. (Phillips, 1997, p.9) Program costs include all the costs associated with the needs assessment, curriculum development, trainers and participants, delivery (including space and materials), and evaluation. For each individual involved in any stage of the training, an accounting of salary, benefits and overhead for the time spent is calculated. In addition, a thorough accounting of program costs should include 'opportunity costs', which are any associated costs that the firm must incur as it stops or changes work patterns to develop staff.

In order to calculate the benefits of human resource programs, we first need to understand how to calculate their costs. "Benefits are very often shown by comparing the cost of two ways of doing something, then claiming the difference between them as a cost-saving benefit. Calculating the costs of "people problems" (e.g., grievances, accidents, employee relations conflicts) is the way you show the benefits of reducing these problems" (Spencer, 1986, p.84).

Phillips (1997) details several strategies for converting collected data into monetary values to determine return on training investment. Collecting hard data requires a simple search for existing measures of outcomes such as units produced, patients visited, overtime, repair time, operating and accident costs, error rates and
rework, inventory adjustments etc. Most training initiatives are developing non-technical skills, which are more difficult to measure. Data collected in this type of evaluation are usually subjective but can be grouped into thematic areas that provide an opportunity for comparisons with the pre-training states. Strategies for converting these data into monetary values include calculating the cost of quality, converting employee time, using historical costs, using internal and external experts' input, using estimates from participants, management and training staff, and using values from external databases (Phillips, 1997).

While the ROI process is an effective way to measure the accountability of training, it has rarely been used in the past. A complete implementation of the process requires a thorough needs assessment and significant planning before an ROI program is implemented. With the ROI process in place, a new change program that does not produce results will be exposed. Management will be aware of it early so that adjustments can be made. (Phillips, 1997. p.4)

On the journey to becoming a learning organization, feedback is vital to maintaining a steady course of improvement. Recently, there is more and more evidence that organizations are turning their attention to evaluating learning programs. Firms specializing in assisting organizations to tabulate and interpret training impact data are finding a market. A variety of publications describe their impact assessment projects to encourage and promote training evaluation. In 1994 and again in 1997, Phillips compiled a book of case examples of training and development ROI projects for the American Society for Training and Development (Phillips, 1994). The cases represent a wide range of settings, methodologies, strategies, and approaches in manufacturing, service, and government organizations.
The American Society for Training and Development casebook (1999) details how Litton Industries, an avionics firm, conducted an ROI on a self-directed work teams program it provided to all employees. Litton incorporated action planning and performance monitoring into the evaluation process and reported a productivity increase of 45%, scrap rate reduction of 50% and an overall 650% ROI. A health maintenance organization (HMO) measured the return-on-investment for a company-wide development program that included team building, group meeting skills and customer service training. They used performance monitoring and management estimation in their evaluation process and calculated a 1270% ROI. An electric and gas utility targeted managers and supervisors for its Applied Behaviour Management training which focussed on achieving employee involvement to increase quality, productivity, and profits. Using action planning and performance monitoring, they were able to declare a 400% return on this development investment.

In his how-to book for human resources professionals, Spencer (1986) describes a consulting effort to teach a group basic principles of meeting management designed to decrease the necessity for the group to meet. At the end of the program, the manager and his subordinates agreed they could meet weekly rather than daily, if they followed the principles they had been taught. A cost-benefit accounting of this effort was calculated by adding the full cost of the labour of the manager, his subordinates, and the consultant and comparing it to the saving of everyone’s time in four meetings a week for 50 weeks, resulting in a cost-benefit ratio of 1:90.
Clothing retailing giant, The Gap, Inc. recently commissioned a detailed, long-term assessment to determine the impact of Situational Leadership training on 850 corporate based executives, 400 regional executives and 1100 store managers in their The Gap, GapKids, Banana Republic, and International divisions. The groups were assessed one year after the learning initiative using a combination of quantitative and qualitative data collection methodologies reflecting Kirkpatrick's four levels. They were able to determine that participants improved in seven of the eight skill areas to a statistically significant degree, that both involuntary and voluntary turnover decreased in stores led by managers with these higher scores, and that sales increased (Blanchard Training & Development, Inc., 1997).

These case examples provide insight and encouragement for OD practitioners considering their own evaluations of the impact learning initiatives are having on their organization’s bottom line. They provide concrete validation of the time and effort spent fostering a learning culture. The information such studies yield is invaluable feedback for charting and adjusting the course of organizational learning strategy, highlighting specific successes where they exist, and facilitating informed reflection for future development directions.
Chapter 3: Methodology

The purpose of the study is to understand how organizations undertake the transition from the traditional approach to employee training to ones that value learning as an integral part of the way they realize their business goals. This examination of one organization’s journey provides the opportunity to test current theories against practice, to identify gaps in these theories and to provide direction for further study.

In selecting a methodology, three options are available: quantitative, qualitative, or a combination of both. Quantitative, or experimental research, uses deductive logic to explain and predict behaviour, and allows the researcher to manipulate the variables. The strength of quantitative research lies in the detached and objective observations of the researcher (Yegidis & Weinbach, 1996). Some quantitative methods, such as a survey, have the advantage of being able to collect a large amount of data from a large population, in a short amount of time. The resulting analysis identifies the areas for further study using qualitative tools. In other situations, qualitative studies set the stage for quantitative work. Qualitative research involves the direct observation of human activity and interaction in a continuous and naturalistic fashion (Rist in Rogers, 1994). The strength of qualitative research is the opportunity for the researcher to accurately depict a particular process or phenomenon. It acknowledges the importance of context and tries to understand complex social events from the perspective of the individuals actually experiencing the situation or process. It “allows an investigation to retain the holistic and meaningful characteristics of real-life events” (Yin, 1989, p. 14). The
research for this thesis employs a primarily qualitative methodology, although the use of
a survey provides a quantitative flavour to the analysis and interpretation of the results.
The nature of this case study led to the selection of both qualitative and quantitative
methods for the effective collection of data and representation of employee perceptions.
Qualitative methods such as observation, document analysis and focus groups, as used in
this study, aid in understanding the context in which this study was undertaken. They
also permit a deeper exploration of the concerns and issues of the participants (Bogdan &
Biklen, 1982).

This study follows a case study design in which a single group is studied only
once subsequent to some intervention presumed to cause the change (Lee, 1989). A case
study is a sound choice when the objective of the research strategy is to understand the
“how” or “why” questions being posed (Yin, 1989).

A common difficulty with social research is that the real world (as opposed to a
laboratory setting) is affected by simultaneous and often connected variables making the
establishment of cause and effect a complex process. Ultimately, the real value of a case
study is to accurately capture the collective perspective of those living through the
change and by doing so, to honour their participation in, and contribution to, the
outcomes.
3.1 PROCEDURES

Selection of the Research Site

The selection of the company for this case study was primarily based on the opportunity to describe the events of the learning journey over a period of four years. This unique situation comes about from the researcher's ten-year association with the organization in the role of champion of the learning initiatives.

The single site study permits a deeper examination of the impact of changes introduced to foster a value of learning in the organization. The researcher's position allowed the tracking of subtle changes not readily captured by external review. In addition, the researcher had access to data that, although outside the scope of the study, provided clues to the degree of change that has transpired over the past four years. All employees of this company were located in the same area, making observation and measurement of the overall learning culture less complex.

Research Design

This research project uses both quantitative and qualitative approaches to gather evidence of the effectiveness of the company's efforts to create an environment that values learning as a competitive advantage. The method selected for this research was the single case study because the study is limited to an intact group which participated in company-provided learning opportunities. Borg and Hall indicate that "The case study, in its simplest form, involves an investigator who makes a detailed examination of a
single subject or group phenomenon” (Borg and Gall, 1989, p. 402). This is supported by Merriam’s comment that “The decision to focus on qualitative case studies stems from the fact that this design is chosen precisely because the researchers are interested in insight, discovery and interpretation rather than hypothesis testing” (Merriam, 1988, p. 10).

The objective of the researcher in a case study is to collect sufficient data to allow for an analysis and interpretation of the findings that would enlarge the knowledge base of the area under investigation. The value of the case study lies in the chance to get close to the subject, which is not available in research efforts using derivative data (Bromley, 1986, p. 23).

To provide credible findings from the case study, it is wise to incorporate multiple measurement strategies. “Thus, any finding or conclusion in a case study is likely to be more convincing and accurate if it is based on several different sources of information, following a corroboratory mode” (Yin, 1989, p. 97). This current research combines three types of data collection efforts: historical document review of changes in the culture, an electronic employee survey and focus groups with employees and managers. Stakes captures the case study’s unique contribution to knowledge when he “.... claims that knowledge learned from case study is different from other research knowledge .... case study resonates with our own experience ... our experience is rooted in context, as is knowledge in case studies ....readers bring to a case study their own experience and understanding ...” (Stakes, 1981, p. 15).
Organizational learning survey

The primary source of data was a survey sent to all employees (Appendix A). The survey was extracted from "Ten Steps to a Learning Organization" (Kline & Saunders, 1996) and addresses the cultural components of organizational learning. Anderson remarks that "Questionnaires/surveys are not a panacea in research; they are a necessary evil. They do enable the collection of data not otherwise available" (Anderson, 1990, p. 205).

The survey consisted of 36 questions organized into the ten factors of the learning organization culture as identified by Kline & Saunders. Permission was obtained from the publisher for the use of the survey tool in this study (Appendix H). The survey was sent out electronically using a software package (Decisive Survey), which provides a feature that blocks the e-mail addresses of the respondents. The electronic survey method increased participation in a high-technology environment, ensured confidentiality and tabulated and cross-correlated the raw data. As another step to maintaining confidentiality, the survey responses were collected by a third party who provided the researcher with the raw data.

The sample for the survey consisted of the volunteer respondents from the entire employee population to whom the survey was sent. All employees were located at one site in Concord, Ontario. Respondents were asked to identify themselves against functional groups (a choice of four) and against job groups (a choice of five). Each subgroup exceeded five respondents, thus further protecting anonymity. One hundred and
forty-three responses were received from a population of 304, for a response rate of 47%.
All responses received were completed in enough detail to be used in the data analysis.

Due to the confidential nature of the responses, administrative consent (Appendix B) was obtained from the company to use the responses to the questionnaire in this research.

**Focus groups**

In addition to the questionnaire, and to clarify issues or trends emerging from the questionnaire results, two focus groups were conducted with a random sample of employees and a second random sample of managers from the general population. Focus groups involve the use of detailed interviews in which the participants are selected based upon a sampling of a specific population that share a common problem. (Lederman, 1990). Focus groups allow the researcher to learn about how people feel about an issue. They are also useful in generating ideas and validating impressions left by other forms of data collection.

A sample size of ten employees (randomly selected from twenty volunteers) and thirteen managers (comprising all volunteer managers) took part in two separate focus groups. A general request for participation was sent electronically to all employees and managers inviting their participation in the groups. The E-mail message is attached in Appendix C. A list of names of interested employees and managers was compiled and a random numbering methodology was used to identify twelve potential candidates per population group. This allowed for a reserve in case of attrition or refusal to participate
in the research study. Participants were asked to sign a consent form (Appendix D) prior to the focus group interviews.

The researcher's relationship with the organization, as a member of senior management, was perceived as an obstacle in soliciting manager and employee feedback about programs designed and managed by the researcher. In an attempt to minimize this influence, an objective interviewer conducted the focus group meetings and created a safe environment where participants were completely comfortable sharing their honest comments. The interviewer was a graduate student with a background in counselling psychology working with the organization on a separate project. She brought considerable skill in facilitation and observation, which resulted in the collection of rich data. Each meeting lasted two hours, and questions (Appendix E) were designed based on the findings from the analysis of the responses to the learning survey. Responses were summarized for each question without reference to participant name, position or department.

Documentation review

The third source of data for this research comes from the review of organizational documents which provided an indication of the culture of the organization over the four year period, in addition to evidence, if any, of the increasing value in learning across the enterprise. This review included three employee opinion surveys, historical material and an analysis of the organization's typology based on the Myers-Briggs Type Indicator, all
of which are summarized in Chapter 4, section 4.1 of this document as context for the study.

3.2 DATA ANALYSIS

Learning Survey

The participant responses were sent electronically to a software survey tool designed to tabulate the results. Each question in the survey was recorded and tabulated. The scores of the respondents were averaged for a calculated mean score on a scale of A (not at all) to E (to a very great extent). The analysis of the responses was calculated by examining the frequency distributions. The frequency of responses, modal responses, on normal distribution curves, describes participants’ assessment of the cultural factors related to learning.

Focus Groups

The responses to the questions were summarized without any effort to edit or interpret the information. In the first phase of the qualitative data analysis, all responses were reviewed and examined for themes or patterns of responses. A coding procedure was used to attach the responses to the learning organization model (Kline & Saunders, 1998) and the ten steps identified in their survey. During the final review, the data were summarized under the ten themes outlined by Kline & Saunders.
Documentation Review

This phase of the study consisted of capturing the key areas of employee satisfaction and dissatisfaction from employee opinion surveys from 1994 and 1996.

3.3 RELIABILITY AND VALIDITY

In designing this research project, both internal validity, or the extent to which scientific observations and measurements are authentic representations of some reality and, external validity, or the degree to which representations may be compared legitimately across groups have been taken into consideration (LeCompte & Goetz, 1982).

To ensure the internal reliability, or the degree to which other researchers can replicate the findings (LeCompte & Goetz, 1982) of this research project, the following steps were taken: the survey questions are documented and attached in (Appendix A), other descriptive materials related to the organization are referenced and can be made available, and the focus group questions are attached in (Appendix E). Internal validity is also secured by a sample size (304) and response rate (47%) large enough to allow for some generalization to the entire employee population at this company. The sample population was comprised of employees from the base population, which is defined as all employees at the time of administration of the survey. The findings from this research study are not generalized to other organizations, populations or situations.
The degree to which independent researchers would discover the same phenomena or generate the same constructs in the same or similar settings implies external reliability (LeComte & Goetz, 1982). This was addressed by providing a description of the respondent population demographics, defining the sample selection process, and describing the methods of data collection and analysis.

3.4 LIMITATIONS TO THE STUDY

While researcher bias is unavoidable in qualitative studies, it is often viewed as a valuable component of the data. In this case, the bias is augmented by the fact that the researcher is also a permanent member of the management of the target organization. The potential for bias was limited by the use of software to tabulate the survey responses and by the use of an objective third party to conduct and summarize the focus groups results.

Focus group interviews, while a sound methodology for the exploration of beliefs and perceptions, are limited in that the interviewer cannot possibly explore all aspects of the issues at hand in the available time. In addition, the micro-culture of the participant group affects the direction of the discussion. Individuals with particularly strong opinions or those who may have other reasons for participating, may direct the discussion in a manner that is not representative of the collective opinions of the others in the group. This limitation was managed by the use of an experienced interviewer, with experience in meeting facilitation, who had the ability to keep the group focused on the topics being investigated.
The limitation of the survey was the absence of any open-ended questions. While the focus group results expand, clarify and explore the main themes derived from the survey responses, the time lag between the two events may have affected the types of issues discussed in the focus groups. The use of open-ended questions in the survey would have captured thoughts that were fresh in the minds of the respondents at the time they completed the questionnaire.
Chapter 4: Findings

4.1 THE COMPANY CONTEXT

MDS SCIEX is one of the world’s leading suppliers of mass spectrometers. This highly advanced technology plays a key role in developing a wide range of commercial products and health care services that add to the quality of life for people the world over, including new pharmaceuticals and genetically engineered drugs, advances in disease testing and diagnosis, environmentally-safe biological and chemical pesticides and herbicides, and enhanced testing procedures for water and soil contamination.

MDS SCIEX is a division of MDS Inc., which is Canada’s largest and most diversified health and life sciences company. It exports products to more than 50 countries through two marketing alliances. Through these alliances, MDS SCIEX designs and manufactures mass spectrometers for use in testing manufactured goods, protecting the environment, and treating and preventing disease. The MDS SCIEX history is rooted in groundbreaking scientific research conducted by one of the company’s founders, Doctor Barry French. During the 1960’s, Professor French, along with other scientists at the University of Toronto’s Institute for Aerospace Studies (UTIAS) developed this technology, which formed the basis for a number of commercial applications using mass spectrometers, and was the driving force behind the creation of MDS SCIEX in 1974. After the introduction of the world’s first triple-quadrupole mass spectrometer in the early 1980’s, MDS SCIEX was presented with the Canada Award for Business Excellence in
the category of Technology Transfer. MDS SCIEX was honoured with the same award again in 1993 for innovations in mass spectrometer instrumentation.

MDS SCIEX employs more than 400 highly skilled professionals, with nearly half of the workforce in scientific research, product engineering and software development. MDS SCIEX has set aggressive growth targets for the next five years and will rely more than ever on an adaptable and responsive workforce to meet these goals in the face of external market pressures.

Cultural Context

MDS Inc., and its divisions, believe that basic human values go hand in hand with good business. The Core Values express what the organization is striving to achieve from a cultural perspective. Adherence to the values is considered essential to the enduring success of MDS as a whole. MDS SCIEX has embraced these values as its own:

_Mutual Trust:_
Having confidence to rely on others and to be open to new and different people and ideas.

_Genuine concern and respect for people._

_Showing genuine concern for others:_
Treating people as individuals with the same understanding and appreciation we seek for ourselves.

_Integrity:_
Being reliable and accountable in word and behaviour.
Commitment to excellence:

Striving to reach our full potential as a Company and as individuals.

MDS SCIEX has made significant progress over the past five years in modelling its values through actions. The nature of the professional groups represented in the organization (scientists, engineers and technicians) influence the culture with unique strengths and some liabilities. These are discussed in detail in the next section.

Structure

More than two-thirds of the staff is made up of engineers and scientists with the remaining one-third being technicians, professional and support staff. The organizational structure is a traditional one with functional departments divided based on specializations. A matrix approach is used for managing product development teams with representatives from research, engineering, purchasing, marketing and manufacturing.

The production group is composed of a number of teams with rotating team leaders. These teams are responsible for the allocation of work to meet production targets and some administrative tasks related to parts supply, time and resource planning and scheduling.
Typology

The theory of psychological types was developed by Carl Jung in the 1920's. The Myers-Briggs Type Indicator (MBTI) was developed by Katherine Briggs and her daughter Isabel Myers during World War II to put Jung's theory into practice.

Psychological types offer a method of explaining how apparently random human behaviour is actually consistent, because it flows from innate preferences in how human personalities interact with the environment to satisfy their needs. Type theory further refines the contrasts by outlining the differences in people in the way they focus their attention, absorb information, make decisions and approach their lives. Sixteen types have been identified by the MBTI (Briggs Myers and McCaulley, 1993). They are distinguished by a four-letter type code which describes an individual's preferred or most comfortable way of being or operating in the world. Knowing the type code allows you to make predictions based on a person's habitual ways of functioning.

The MBTI classifies preferences according to attitudes and functions. First, attitudes describe the direction of the energy flow, either inward (introverted) or outward (extroverted); and secondly, it describes the preferred way of dealing with the world by either gathering information (perceiving) or by drawing conclusions (judging). The two functions refer to mental processes; the first is collecting data (sensing and intuiting) and the second is decision-making (thinking and feeling) (Briggs Myers, 1993).
Jungian theory emphasized that in order to achieve our full potential, we must achieve a balance between engaging internal reflection (I) and relating to the external world (E), collecting data through our senses (S) and through our intuition (N), and making decisions based on logic (T) and values (F).

The MBTI was chosen as the framework for exploring the MDS SCIEX management style and the organizational culture. William Bridges (Bridges, 1993) describes a number of factors that affect the character of an organization and are reflected in the organizational type:

- the industry in which it operates
- the dominance of one or two functions in the organization
- the collective characters of the employees
- the leaders
- the stage an organization is in relative to its life cycle

In Myers-Briggs' terminology, MDS SCIEX can be described as an INTP organization. According to Bridges (1992), the INTP company is the best in dealing with systems and designs with a focus on understanding and creating, not on implementation or building multiples of the same products. It is one of the most creative of organizational types and often finds itself on the leading edge in its field, is independent, innovative, and sees itself as unique.
It is stimulated by difficulty and complexity, often trivializes objections grounded in reality and avoids routine activities. INTP companies are persistent and want to move on to the next challenge once the problem is solved. They are pragmatic, with everything demanding proof and everything being up for discussion. They are impatient with things not being understood the first time.

These organizations tend to be loners and do not always communicate well with employees, joint ventures or customers. They can be unaware of, or uninterested in, the feelings of the employees and will attract and retain employees who share a desire to view things in a logical manner. The leaders expect the same level of commitment from all employees which they themselves give the organization. Managers take a lot for granted, make heavy demands on people, and expect the process to be its own reward. Interpersonal communications can be limited to the technical or systems work and often does not include personal aspects of people's lives. Acceptance is accorded to those who earn credibility through formal education and demonstrated intellectual capacity.

INTP companies are more comfortable with change that they create. If change is forced on them, they may deny or denounce it, have a period of confusion and can lose momentum. These organizations have difficulty with the human side of change and may dismiss the softer side of relationships as non-productive. As a result of this typology, MDS SCIEX's primary strengths are the ability to: organize and synthesize data; persist in completing difficult tasks; engage in long-range planning and conceptualization; provide impersonal and impartial analysis; develop models and patterns to organize
concepts; be intellectually curious, willing to learn and see possibilities. MDS SCIEX’s primary limitations include: being skeptical and overly critical of others; insensitive to feelings and needs of others; intolerant of ideas not well reasoned or articulated; and having difficulty with separating ego from performance. Key motivators include: having the opportunity to achieve and demonstrate competency; time to reflect; a chance to test theories; and minimal bureaucracy. Key detractors: are regulations and rules: being forced to meet deadlines without time for study; and conformity and uniformity.

As a result of this typology, the organization has an inherent set of values which have a strong impact on defining the culture. This manifests itself as supporting heroes over teams, effort over results, and tasks over relationships. Many of MDS SCIEX’s systems, structures and programs encourage these cultural outcomes. A number of initiatives have been launched over the past five years in an attempt to shift the culture into one that values teamwork, has skilled leaders, is innovative at all levels, is responsive to change, delivers results and views learning as critical to the company’s success. The high number of individuals sharing the INT preferences means that the implementation of cultural changes requires challenging the “group-think” in an environment where financial success may have reduced the sense of urgency for changes not attached to the technology. While internal change agents have been frustrated by the slow pace of change, tremendous strides have been made towards creating a culture positioned for both organizational and personal growth. Recently, due to additions and changes to the management team, there has been a shift to stronger sensing and judging preferences which are influencing the management style.
Cultural Benchmark

MDS SCIEX started formally soliciting employee feedback in 1992 with the first employee survey. Two subsequent surveys followed in 1994 and 1996. The first two tools where purchased and had limited ability for modification. The 1996 instrument, Barometer, was designed internally in response to the need to collect feedback on specific components of the culture. The results of these communication efforts provide a retrospective view on the evolution of the culture. This study focuses on the results of the 1994 and 1996 surveys which coincide with the launch of formalized learning activities.

1994 Employee Survey

A total of 147 employees, a 70% response rate, participated in the 1994 MDS SCIEX Employee Opinion Survey. A structured survey instrument consisting of 51 items (Appendix F), divided among 13 measurement categories, was distributed to all employees. With the exception of a single item “miscellaneous” category, there were four items per category. In addition, the survey questionnaire included an open-ended section in which respondents were invited to make additional comments. Participation in the survey was anonymous and voluntary.

Overall survey scores were somewhat mixed with 24 out of 51 of the survey items receiving scores below the MDS SCIEX satisfaction threshold of 60% positive response. (All scores are reported in terms of percentage of employees who responded positively to
the various survey issues). Five additional items, although above the threshold level, were each more than 5 points below the MDS SCIEX normative range.

At the same time, many survey items received scores within or above threshold level and above the company’s database norms. This was especially true of employees’ perceptions of supervisory and empowerment practices. The following are the significant highlights from the survey results:

Communication

Employees seemed to be generally positive about communication practices within the organization, including the credibility of communication from management. This category probably would have scored at or above norm had it not been for a 16 point below norm score in the area of information sufficiency.

Teamwork

Although employees were at least reasonably positive about cross-departmental teamwork, they were critical about teamwork between employees and management, among management, itself, and about the perceived lack of teamwork focus in the organization. This was the third lowest rated category in the survey.

Management Practices

This was another low scoring category; management practices were seriously questioned by employees. Essentially, employees seem quite unsure about how effectively management engages in various practices that contribute to overall organization performance.
Work Performance

The most significant concerns here seem to be that employees believed they are not recognized for good work performance and that there are limited opportunities for career development.

Empowerment

The overall score for this category exceeded norm by 11 points. Scores for management practices related to empowerment were right at the threshold level. Those more affected by supervisory practices were significantly higher than the norm. It would appear that employees are somewhat more satisfied with the way management treats them than with the way management utilizes other organizational resources such as tools, finances and materials.

Organization Practices

The only truly significant problem in this category is that employees seemed to indicate that they are not committed to organizational goals. There may be a correlation between this issue, their attitude toward management (as opposed to supervision), and their earlier statement that the job environment is not motivating to them.

Supervisory Practices

Most of the employees reported that their supervisor is effective as a problem solver, that he or she is willing to listen to their problems or complaints and that the supervisor treats them fairly. However, they are far less positive about the training and coaching skill of their supervisors.
The Job Itself

Employees were generally satisfied with the nature of their jobs. However, they expressed some concern about the extent to which qualified employees are given fair consideration for advancement.

Reaction to Survey

The most significant finding in this category was that only 60% of the employees seemed to believe management would use the results of this survey constructively.

Training and Education

This was the lowest rated category in the survey. Although a small majority of employees indicated that they receive the training they need to do their jobs properly, most employees were critical about on-going programs for skill development, training and education that would help to make them more effective in their jobs. A more detailed examination of the responses related to the Training and Development questions provided additional insight.

<table>
<thead>
<tr>
<th>#</th>
<th>Training and Education Questions</th>
<th>Positive Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>46.</td>
<td>I have received all of the training that I need to do my job properly.</td>
<td>60%</td>
</tr>
<tr>
<td>47.</td>
<td>New employees are given the training that they need to do their jobs properly.</td>
<td>58%</td>
</tr>
<tr>
<td>48.</td>
<td>Employees are provided with continuous education and training to develop their job skills.</td>
<td>64%</td>
</tr>
<tr>
<td>49.</td>
<td>The employees in our work group have received training in ways to improve their effectiveness as a team.</td>
<td>58%</td>
</tr>
<tr>
<td>50.</td>
<td>Employees are provided with continuous education and training about the operations of this organization and its products and services.</td>
<td>53%</td>
</tr>
</tbody>
</table>
1996 Employee Survey

The Barometer instrument (Appendix G) was developed by MDS SCIEX in order to survey employees' opinions about what was being done well and what could be improved. In 1996, the survey was more comprehensive than previous surveys completed in 1992 and 1994. The responses of 181 employees (80% response rate) to 106 questions were tabulated. Written comments to the three open-ended questions were summarized. Everything possible was done to ensure confidentiality by having responses sent directly to a third party for analysis. The raw data was subsequently destroyed.

Where possible, comparisons with the 1994 Survey were made. Although no normative data is available for comparison with the Barometer, there is a standard benchmark for instruments of this kind. Ratings of 60% positive or greater usually indicate an acceptably favourable work environment. Ratings from 50% to 60% suggest mixed feelings. Ratings below 50% are an indication of an area in need of attention or improvement.

Questions were grouped into 16 topic areas to measure opinions on specific factors which make up a company's work environment. Responses of 4 or 5 on the five-point scale (agree or strongly agree) were considered positive. The total percentage of positive scores provided the basis of the interpretation. Unsure or unknown responses were combined with neutral (3 on the five point scale) scores. Scores below 3 were considered negative (disagree or strongly disagree). The percentage of responses in each category is provided along with an interpretation of the overall trends. Highlights of the
differences between managers and non-managers, and between newer (0 to 3 years
service) and long-standing employees (4 or more years service) are provided. Weighted
averages were used.

Key Findings

The overall results present a mixed picture. Definite progress has been made in
important areas since the 1994 survey. At the same time, there was clear need to address
others. Most employees continued to feel that MDS SCIEX is a good place to work and
that their jobs are meaningful and challenging. They care about their work and are ready
to contribute more. There is a commitment to quality and diversity and a strong sense of
collaboration and support within work teams. People are proud of their work and want to
improve the way things are done. They expressed confidence that this survey would
contribute to that progress. The results suggest that since 1994, employees felt more
involved in the decision-making process. While some progress had been made in
reducing bureaucratic procedures, employees believed that there was more room for
improvement in this area.

Comparisons to the 1994 Survey

Compared to the 1994 Survey results, effective work team performance and
commitment to quality had increased, as had satisfaction with training and development.
There had been some slippage in satisfaction ratings in the areas of compensation and
benefits, communication and management practices. Better benefits and pay were being
requested. There was a desire for more timely and complete sharing of information
“between all levels of staff and departments”. There is room for improvement in managers' responsiveness and support, especially in coaching and on-the-job training.

Employees were also calling for more support for innovation and creativity, greater commitment to quality and customer service, improved job-orientation for new employees, better teamwork among management itself, more feedback on employee performance and improved ways to measure and reward it.

Employee Comments

The quantitative results of the 1996 survey were complemented by employees' comments. The most significant positive changes mentioned were a new facility, new hires and management's improved focus on decision-making. Increased training opportunities and greater attention to quality issues were also mentioned.

The most frequently mentioned irritants were poor communication between departments, lack of company-wide commitment to quality and customer service issues, compensation and overly complicated procedures. There was also some concern that distrust was on the increase. A significant number of employees believed there was risk in speaking out or in challenging management decisions.

Points of Interest
- 80% of all employees completed the Barometer
- 55% provided comments to the open-ended questions
the responses of managers tended to be more positive than those of the rest of employees (64% versus 54%), which is not unusual since there is often a difference in perception between managers and other employees.

- employees with less than 3 years of service tended to respond more positively (58%) than those with 4 or more years (54%)

- 25% of employees answered in the neutral position of the response range

- 43% had 4 or more years of service, 39% 3 or less years and 17% did not say

- 13% indicated they were managers, 70% non-managers and 17% gave no indication

Summary of Results

Below are the 16 topics in the 1996 MDS SCiEX BAROMETER, rank-ordered from highest to lowest percentage of positive ratings:

Topics where there is Satisfaction

My Job 71% (Items 28-35)
The Survey 69% (Items 99-103)
Quality 68% (Items 73-77)
Differences 63% (Items 69-72)
Work Teams 62% (Items 49-57)
My Contribution 60% (Items 36-42)

Topics where there are Mixed Feelings

Customer Focus 59% (Items 88-90)
My Manager's Skills 58% (Items 43-48)
Direction and Decision-Making 57% (Items 1-9)
Training & Development 54% (Items 62-68)
Communication 51% (Items 18-27)
Topics where there is a Desire for Change

<table>
<thead>
<tr>
<th>Topic</th>
<th>Percentage</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation &amp; Creativity</td>
<td>49%</td>
<td>(Items 58-61)</td>
</tr>
<tr>
<td>Career Progress/Opportunities</td>
<td>48%</td>
<td>(Items 78-83)</td>
</tr>
<tr>
<td>Policies &amp; Tools</td>
<td>46%</td>
<td>(Items 91-98)</td>
</tr>
<tr>
<td>Management Practices</td>
<td>46%</td>
<td>(Items 10-17)</td>
</tr>
<tr>
<td>Compensation &amp; Benefits</td>
<td>32%</td>
<td>(Items 84-87)</td>
</tr>
</tbody>
</table>

Since the 1994 Survey, there had been improvement in: Quality Focus, Work Teams, and Training & Development areas. Some ground had been lost in: Compensation & Benefits, Communication, and Managers' Skills.

In response to the initial requests for more learning opportunities in 1994, MDS SCIEX developed a learning philosophy and supporting programs to respond to the needs of the employees in 1995. The impact of this philosophy can be seen in the internal learning initiatives for managers and employees. These new initiatives are, in part, responsible for the small increase in the level of satisfaction in training and development in the 1996 employee survey.

MDS SCIEX Learning Philosophy

In 1995, MDS SCIEX developed a learning philosophy and objectives to serve as a framework for learning initiatives. The philosophy resulted from a small task force of managers who were initially concerned with the quality of the orientation experience of new employees. It became clear from the discussion, that employee orientation was part of the larger topic of employee training and learning. The task force proceeded to develop organizational guidelines for learning that have evolved over the past four years,
as the organization gained experience with designing learning initiatives and their supporting systems.

**Philosophy**

By 1999, the learning philosophy for MDS SCIEX reflected a commitment to creating an environment that encouraged learning at all levels, with learning defined as informal or formal sessions, internal or external events and activities that are initiated by the employee, the manager, and/or the company.

**Objectives**

The organizational objectives are to maintain an awareness of the changing needs of the business and the skills and behaviours required to meet these targets in the present and the future; to create multiple options for employees and managers to expand their knowledge and enhance their skills; to add new systems that support behavioural changes related to learning and the application of learning on the job, and to change or remove systems that detract from the integration of the learning initiatives; to evaluate and monitor progress toward the learning strategies; and most importantly, to reflect the learning philosophy through daily decisions and actions. Managers and employees are encouraged to invest at least 40, or more, hours each year in acquiring knowledge and skills through a variety of media.
Responsibilities

Employees were expected to acquire the knowledge and information required to perform in their jobs today and in the future. This involves taking the initiative and bringing learning opportunities to the attention of their managers. It also includes sharing new knowledge and information with others and reflecting on approaches and processes and their impact on the business. Employees were also encouraged to discuss their developmental objectives with their managers and select activities that met their needs while taking into account the needs of the business.

Managers were expected to demonstrate insight on the impact of their managerial style and to determine the skills and knowledge needed to meet the organizational standards. Managers were responsible for coaching their employees and peers, and for identifying barriers to growth and development.

MDS SCIEX was committed to developing, communicating and monitoring systems and practices that demonstrate its commitment towards learning by providing resources, tools and time for development.

Working with Facilitators

In addition to these responsibilities, MDS SCIEX established guidelines for all external facilitators participating in formal learning activities. The managers believed that the method of delivery was as important as the content to be shared and viewed the relationship with external facilitators as a learning partnership which is based on a clear
understanding of goals, processes and culture. Facilitators are expected to link learning objectives to the company's strategic goals, thereby providing context for the participants.

MDS SCIEX also identified a number of specific requirements of their facilitators that support its learning practices. They included facilitator preparation prior to formal sessions such as becoming familiar with the culture, conducting needs assessments, and providing participant materials outlining session content and expectations. During the sessions, facilitators were asked to create a positive learning environment by establishing group norms, sharing the results of any pre-assessments, using examples relevant to the culture and business, ensuring that all learning styles are engaged, providing choices for the participants in determining pace, depth, and activities, and creating opportunities for the participants to learn from each other. After the sessions, facilitators were expected to share observations or insights on organisational issues or changes for the next delivery of the session.

Creating Learning Programs

MDS SCIEX was now prepared to introduce a new emphasis on learning. In addition to on-the-job developmental opportunities and formal training accessed externally, an internal learning program was developed in 1995. The genesis of the change was the MDS SCIEX Learning Program which incorporates self-development options, formal learning sessions, career and personal development education, tools and resources, leadership development opportunities, the introduction of innovation skills and tools and the evaluation of company wide initiatives.
The Learning Program has evolved over the past five years as the organization experiments with new learning models and methods of delivery. Managers and employees are regularly asked for feedback and suggestions. In the future, MDS SCIEX plans to tailor its learning activities by using new technologies that increase the self-service components of learning.
4.2 LEARNING SURVEY RESULTS

MDS SCIEX selected the survey questionnaire from the Kline and Saunders (1998) book “Ten Steps to a Learning Organization” for its completeness and brevity. The survey addresses the cultural dimensions of a learning environment through thirty-six questions. A summary of the results is presented here. The full survey data can be found in Appendix H.

Responses

Of the 304 employees contacted, 143 completed the questionnaire. This represents a response rate of 47%. Participants were distributed by Functional Area as follows:

<table>
<thead>
<tr>
<th>Functional Area</th>
<th>Number of Returned Questionnaires</th>
<th>Percentage of Total Returned Questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>48</td>
<td>33.6%</td>
</tr>
<tr>
<td>Product Development</td>
<td>54</td>
<td>37.8%</td>
</tr>
<tr>
<td>Research</td>
<td>4</td>
<td>2.8%</td>
</tr>
<tr>
<td>Other</td>
<td>37</td>
<td>25.9%</td>
</tr>
<tr>
<td>Total</td>
<td>143</td>
<td>100%</td>
</tr>
</tbody>
</table>

Responses by Job Group are captured in the following chart:

<table>
<thead>
<tr>
<th>Job Group</th>
<th>1 Number of Employees*</th>
<th>2 Percentage of Total employees</th>
<th>3 Number of Returned Questionnaires</th>
<th>4 Response Rates</th>
<th>5 Percentage of Total Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientist</td>
<td>37</td>
<td>37/304 = 12%</td>
<td>12</td>
<td>12/37 = 32%</td>
<td>12/143 = 8.4%</td>
</tr>
<tr>
<td>Engineer/Technical</td>
<td>93</td>
<td>93/304 = 31%</td>
<td>53</td>
<td>53/93 = 57%</td>
<td>53/143 = 37.1%</td>
</tr>
<tr>
<td>Specialist/Designer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technician</td>
<td>81</td>
<td>81/304 = 27%</td>
<td>34</td>
<td>34/81 = 42%</td>
<td>34/143 = 23.8%</td>
</tr>
<tr>
<td>Manager (+)</td>
<td>28</td>
<td>28/304 = 9%</td>
<td>20</td>
<td>20/28 = 71%</td>
<td>20/143 = 14.0%</td>
</tr>
<tr>
<td>Administrative/Corporate/Other</td>
<td>65</td>
<td>65/304 = 21%</td>
<td>24</td>
<td>24/65 = 37%</td>
<td>24/143 = 16.8%</td>
</tr>
<tr>
<td>Total</td>
<td>304</td>
<td>143</td>
<td>143/304 = 47%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The breakdown of response rate *within* job groups (Column 4) has important implications for results interpretation. Nearly three quarters of the Management group responded to the survey, about half of the Engineer/Designer and Technician groups responded, and only about one-third of Scientists and Administrative/Corporate employees responded.

Bearing these rates in mind, survey responses from the Management job category can be generalized to the entire management group with greatest confidence, the Engineer/Designer and Technician responses less so; and the Scientist and Administrative/Corporate responses should be considered least reliably representative of the attitudes and beliefs of all of their colleagues. When considering the groups with lower return rates, it would be of value to determine if any factors affected participation selectively, prompting certain individuals to respond and not others (e.g., opportunity or time to complete the survey, desire to communicate job satisfaction or dissatisfaction, attitudes toward the value of giving feedback, interest/disinterest in learning and development issues, concerns with confidentiality etc.).

**Results by Survey Item**

Participants rated the degree to which each statement in the questionnaire describes the current reality at MDS SCIEX using the following five-point scale:

1 = Not at all
2 = To a slight extent
3 = To a moderate extent
4 = To a great extent
5 = To a very great extent
Frequency distributions were generated for the total group's responses as well as responses by job group. Most distributions were bell shaped around the "moderate extent" score of 3, but several items evoked responses that skewed the curves positively (modal response of 2) or negatively (modal response of 4). A brief report on response patterns to each item follows.

**Item 1**

"People feel free to speak their minds about what they have learned without fear, threat or repercussion for disagreeing."

Group results indicate a bell shaped distribution of responses, skewed slightly to the higher scores. The Scientist and Engineer/Designer groups bring the scores up from the mid-range, 75% and 62% respectively choosing scores of 4 and 5. Technicians, Managers and Administrative/Corporate groups agreed "to a moderate extent" as their modal response.

**Item 2**

"Mistakes made by individuals, teams or departments are turned into constructive learning experiences".

Group results indicate a clear bell-shaped distribution of responses across the rating scale. One notable exception is the relatively large (20%) "not at all" response from the Administrative/Corporate group indicating dissatisfaction among 5 employees in this category, a small but significant red flag in an otherwise normal response set.
Item 3

“There is a general feeling that it is always possible to find a better way to do something”.

Group results show a distribution skewed noticeably to the higher scores. Approximately 90% of respondents rated this statement as 3 or higher (67% rating it 4 or 5), not differentiated significantly among job groups, indicating the cultural resonance of this statement for MDS SCIEX. Of interest: 23% of Engineer/Designers and 21% of Technicians rated this item as 5, agreeing to “a very great extent”, two of the highest ratings in the questionnaire.

Item 4

“Multiple viewpoints and open productive debates are encouraged and cultivated”.

The frequency distribution for this item is skewed in favour of the higher scores, with more than 80% of participants selecting 3, 4, or 5. This is indicative of a widely accepted or culturally entrenched message or belief.

Item 5

“Experimentation is endorsed and championed and is a way of doing business”.

The distribution of these scores is skewed to the higher scores across the job groups, with 77% of all respondents scoring this statement as 3, 4, or 5. This is indicative of an accepted cultural belief.
Item 6

"Mistakes are clearly viewed as positive growth opportunities throughout the system".

The overall distribution of these scores is bell shaped, but leaning toward the lower scores. The Scientist, Management and Administrative/Corporate groups scored this item a 2 most frequently (modal responses of 36%, 40% and 41%, respectively). This is an area that appears to need some improvement.

Item 7

"There is a willingness to break old patterns in order to experiment with different ways of organizing and managing daily work".

The overall distribution of these scores is a tall bell shape, with almost 90% of scores falling in ratings 2, 3 and 4. Two notable pockets of disagreement were found among the Technician and Administrative/Corporate groups, with 15% and 17% scoring ! - “not at all”. While these percentages only represent a total of 9 individuals, they may be indicative of a rigidity of systems or leadership within specific corporate functions.

Item 8

"Management practices are innovative, creative and periodically risk-taking".

These responses are distributed relatively in a bell shape, but leaning slightly toward the lower scores. Scientists rate this statement lowest (55% scored 2 or 1) with Technicians and Engineer/Designers not far behind. Management spread their scores in an even bell shape around the “moderate” score (3).
Item 9

"The quality of work life in our organization is improving".

Overall, scoring for this item was a bell shape around the middle score (45% chose score 3, with 24% below and 31% above). The Technician and Engineer/Designer groups’ distributions lean slightly to higher scores, whereas the Scientist and Manager groups lean slightly toward the lower scores. The Administrative/Corporate group was the most evenly distributed around their modal score of 3.

Item 10

"There are formal and informal methods designed to encourage people to share what they learn with their peers and the rest of the organization".

Overall, scoring for this item was a bell shape around the middle score. The Scientist and Engineer/Designer groups lean slightly to higher scores, whereas the Manager and Administrative/Corporate groups lean slightly toward the lower scores. The Technician group responded in an even bell shape around their modal score of 3.

Item 11

"The organization is perceived to be designed for problem-solving and learning".

Group results indicate a bell shaped distribution of responses, skewed slightly to the higher scores. Approximately 45% of respondents agreed with this statement to a "great" or "very great extent", with the Engineer/Designer and Management groups rating highest. The greatest diversity of scores within a job group appears in the Administrative/Corporate group, with 38% rating agreement to "a great extent" and 21%
agreeing “not at all”, indicating very uneven perception of this message across this job group.

**Item 12**

“Learning is expected and encouraged across all levels of the organization: management, research, product development, manufacturing, administration”.

Responses to this item are clearly skewed to the higher scores, with 70% of employees selecting a score of 4 or 5 (agree to a great or very great extent). This statement was one of the highest scoring of the questionnaire across groups (with 83% of Scientists, 81% of Engineer/Designers, 53% of Technicians, 75% of Managers and 61% of Administrative/Corporate group rating it 4 or 5), reflecting the general appreciation and acceptance of this expectation and activity throughout the organization.

**Item 13**

“People have an overview of the organization beyond their specialty and function and adapt their working patterns to it”.

The overall distribution of these scores is bell shaped, but leaning toward the lower scores. Most of the scores (73%) showed respondents agreeing only to a “slight” or “moderate extent”, similarly distributed across job groups. This finding indicates a potential barrier to corporate flexibility and ability to innovate at the grass-roots level.
Item 14

"Lessons learned' sessions are conducted to produce clear and permanent changes to system and practices".

This item received lower than usual scoring. Overall 47% chose a score below 3, whereas only 21% chose a score above 3. Two pockets of disagreement stand out: 73% of Scientists and 59% of Administrative/Corporate scored below 3.

Item 15

"Management practices, operations, policies and practices that become obsolete and hinder the continued growth of people are removed or replaced".

The overall distribution of these scores is bell shaped, but skewing slightly toward the lower scores.

Item 16

"Continuous improvement is expected and treated receptively".

The majority (78%) of responses to this reflected agreement to a "moderate" and "great extent", with the rest of the ratings tapering off higher and lower, producing a tall bell shaped distribution skewed slightly to the higher scores. There was little discrepancy among job groups.

Item 17

"There are clear and specific expectations of each employee to receive a specified number of hours of learning and education annually".
The responses to this statement were spread across the scale, but the lower ratings were selected with greater frequency. This statement garnered the largest percentages of score 1 of the entire questionnaire. Overall, 25% indicated this statement was “not at all” reflective of reality at MDS SCIEX (25% of Scientists, 20% of Engineer/Designers, 18% of Technicians, 30% of Management, and 42% of Administrative/Corporate scored this as 1). Annual learning hours appears to be a topic in need of improved clarity and communication, particularly in light of Item 14 responses, which indicate an apparent strong commitment to learning.

Item 18

"People at all levels are specifically directed towards relevant and valuable learning opportunities inside and outside the organization".

The overall distribution of responses to this statement is bell shaped, skewed to the lower scores. Specifically, 58% of Scientists, 55% of Managers, 46% of Administrative/Corporate and 42% of Engineer/Designers chose a rating of 1 or 2 (“not at all” or “to a slight extent”). Technicians’ responses reflected more of a bell shape around the “moderate” response.

Item 19

"Cross-functional learning opportunities are expected and organized on a regular basis, so that people understand the functions of others in different jobs of related importance."
The overall distribution of responses to this statement is bell shaped, skewed to the lower scores. The Scientist group scored particularly low, two-thirds scoring this statement at 2 or 1. Overall, 86% of participants found this statement “moderately”, “slightly” or “not at all” reflective of reality at MDS SCIEX (scores of 3, 2, and 1). Responses to this item correlate with those of Item 15, indicating a need for improved cross-functional awareness and communication.

Item 20

"Middle managers are seen as having a primary role in keeping the learning process running smoothly throughout the organization".

The distribution of responses to this statement was a bell shape, skewed to the lower scores. Specific groups pull the overall distribution to the lower range: 55% of Managers, 53% of Technicians, and 50% of Administrative/Corporate participants scored this item as 2 or 1 (“slightly” or “not at all” indicative of reality at MDS SCIEX).

Item 21

"The unexpected is viewed as an opportunity for learning".

The responses to this statement essentially fell into a standard bell shape. Of note, however, are two lower response sets: 42% of Scientists and 50% of Managers rating 2 or 1. The remainder of the scores are distributed relatively evenly around the “moderate” response.
Item 22

"People look forward to improving their own competencies as well as those of the whole organization".

The majority (79%) of responses to this statement reflected agreement to a “moderate” and “great extent”, with the rest of the ratings tapering off higher and lower, with only 2 individuals choosing the lowest score (1% of the total), but 14 selecting the highest score (10% of the total).

Item 23

“The systems, structures, policies and practices of the organization are designed to be adaptive, flexible and responsive to internal and external influences”.

The overall distribution of these scores is a standard bell shape around the “moderate” score, with no notable job group differences.

Item 24

“Presently, even if the environment is complicated, chaotic and active, we are not on overload”.

This distribution is skewed to the lower scores, with a high percentage in score 1, but these results are risky to interpret, given that several participants commented that the wording was confusing and contained a double negative when combined with the wording of the response scale.
Item 25

“There is a healthy, manageable level of stress that assists in promoting learning”.

Combined participant responses reflect an overall bell shape, with some job group differences. Scientists’ scores cluster mid to high range (100% scored 3, 4, or 5), while Management and Administrative/Corporate settle more on the lower side of the scale (80% and 82% respectively scoring 3, 2, or 1).

Item 26

“Continuous improvement is practised as well as preached”. 

Responses to this statement reflect a bell shaped curve, leaning slightly to the higher scores. All groups chose more scores above the “moderate” score of 3 than below it, except for the Administrative/Corporate group, which scored in the opposite direction.

Item 27

“The difference between training/education and learning is clearly understood. (Training and education can be so conducted that no learning takes place)”. 

The distribution of responses to this statement is somewhat skewed to the lower scores. Of particular note is the large percentage (65%) of Managers rating this statements as 2 or 1. It is unclear if this reflects a desire on their part for greater understanding of this issue or a sense that their direct reports need to better understand this issue. It may also be indicative of criticism of the value of current training activities within the organization.
Item 28

"People are encouraged and provided with the resources to become self-directed learners".

The distribution of responses to this item is skewed slightly to the higher scores. 66% of respondents chose scores of 3 and 4 ("moderate extent" and "great extent"). Of note, however, is that 21% of the Administrative/Corporate group selected 1 ("not at all"), indicating a potential inequity in distribution of learning resources or time to make use of resources, differing staff awareness of available resources, or uneven management encouragement.

Item 29

"There is a formal, on-going education program to prepare middle managers in their new roles as facilitators, coaches and leaders".

The majority of responses to this item (69%) were score 3 and 4 ("moderate" and "great extent"), skewing this distribution slightly to the positive side. This was true for all job groups.

Item 30

"Recognition of your own learning style and those of co-workers is used to improve communication and overall organizational learning".

The responses to this item are distributed in a clear bell shape. A few notable pockets of job group scores that deviate from this shape are: 40% of Managers, 34% of Engineers and 25% of the Administrative/Corporate group selecting 2 or 1 as their rating.
This finding may indicate that the lack of awareness of learning style differences hinders communication and learning, and is potentially a valuable topic for staff development.

**Item 31**

"Management is sensitive to learning and development differences in their employees, realizing that people learn and improve their situations in different ways".

Responses to this item are generally normally distributed around the "moderate" score.

**Item 32**

"There is sufficient time scheduled into people's calendars to step back from day-to-day operations and reflect on what is happening in the organization."

Responses to this item showed a clear disagreement that this reflects reality at MDS SCIEX. Particularly within the Management group (with 80% scoring a 2 or 1) but also in the Administrative/Corporate group (70% scoring 2 or 1), Scientists (59% scoring 2 or 1), and Engineer/Designers (52% scoring 2 or 1), these responses indicate that opportunities for reflection are few and far between in their busy environment. These results corroborate those of Item 27, where both Management and Administrative/Corporate groups disagreed that their stress levels were "healthy" or "manageable".
Item 33

"There is direction set, and resources allocated to bring about meaningful and lasting learning".

Responses to this item fall into a normal distribution, with a notable pocket of disagreement in the Administrative/Corporate group, where 25% of respondents (or 6 individuals) rated this as "not at all" reflective of reality at MDS SCIEX.

Item 34

"Teams are recognized and rewarded for their innovative and paradigm-breaking solutions to problems".

Responses to this item are skewed toward the lower scores among all groups except Scientists, who distributed their responses normally. Particularly, Technicians and Managers rate team recognition as problematic, with 59% and 53% respectively selecting a score of 2 or 1.

Item 35

"Managers have considerable skills for gathering information and developing their abilities to cope with demanding and changing management situations".

The distribution of these responses is generally bell shaped, with Managers selecting higher scores to a slightly greater degree (50% choosing 4 or 5) than the other groups (27% choosing 4 or 5). It would seem their self-assessments in this area outscore the assessments by their direct reports, a finding suggesting 360-degree feedback would be of value to managers.
Item 36

"Managers enable their staffs to become self-developers and learn how to improve their performances".

This bell shaped distribution of responses is skewed slightly higher than the midpoint for all groups except managers, who rate themselves lower more often (scores spread across 2, 3 and 4) than do their direct reports (scores mainly in 3 and 4). When considered with their higher self-ratings in the previous item, it could be interpreted that managers are less confident with their ability to facilitate learning in others than with their ability to develop their own skills on an ongoing basis.
Survey Interpretation

In their book "Ten Steps to a Learning Organization" (1998), Kline and Saunders suggest that the cultural shift required to become an organization that values learning and adaptability is an evolutionary one. The goals of the first step must be achieved and internalized across the organization before the demands of the next step are presented, and so on, recognizing that individuals and departments may differ in their starting points on this journey. Specific groups of items from the survey can be analyzed as representative of each of these "steps. The focus group findings are grouped according to the three topics of this research: leadership, rewards and recognition, and the transfer of learning and evaluation. These finding are reported separately in this chapter. The survey items referred to below in each step can be found in Appendix A.

Step 1 - Assessment of Learning Culture
(Includes Items 9, 16, 22-26, 32, 35-36)

The first step in improving the learning culture in any organization is a thorough assessment across job groups to determine the current state. Some of the more general survey items addressed in this section give us a hint of the detail that follows.

Two general culture items, Item 9 (quality of work life improving) and Item 23 (systems, policies are flexible) were both rated with moderate agreement by the majority of respondents, indicating no serious complaints but leaving lots of room for improvement.
Items related to continuous improvement attitudes and practices reflect a somewhat more positive perception. Group scores for Item 16 (improvement expected, treated receptively), Item 22 (eagerness to improve competencies), and Item 26 (improvement not just talk) were predominantly above 3 (45%, 53% and 41%, respectively), with the remainder mostly at 3, indicating an awareness and acceptance of improvement of self and the organization as a corporate priority. These results are consistent with learning organization vision of a community that nurtures, values, and supports the development and learning of every individual (Gephart et al., 1996, p. 38).

Some notable exceptions stand out, particularly with respect to workload. Response to Items 25 (stress is manageable) and 32 (time for reflection) indicate that both the Management and Administrative/Corporate groups find day-to-day operations stressful beyond the “healthy” degree, eclipsing most or all reflection time. Time for self-development and reflection is considered a vital factor in facilitating learning (Buckler, 1998, p. 18).

Management Role

For Item 35 (managers’ skills for gathering information and developing their abilities to cope with demanding and changing management situations), managers rated themselves higher more often (50% rated themselves 4 or 5) than did their direct reports (only 25% rated them 4 or 5). The opposite was true for Item 36 (staff enabled to improve), where managers rated themselves lower more frequently than did their staff in terms of enabling staff “to become self-developers”. In considering these different
reactions to management skills, it appears that managers are overconfident about their ability to develop their own skills and underestimate their ability to facilitate learning in others.

In a learning organization, each individual takes responsibility for his or her own learning (Senge, 1990, p. 141). It appears that the majority of MDS SCIEX employees have accepted this message, and despite negative feedback on workload stress and managers’ flexibility, they feel enabled to make decisions about their own learning and are committed to continuous improvement. By making more time for the reflection stage of learning for themselves and their staff, managers may benefit in unanticipated ways.

There must be time for reflection and analysis, to think about strategic plans, dissect customer needs, assess current work systems, and invent new products. Learning is difficult when employees are harried or rushed; it tends to be driven out by the pressures of the moment. Only if top management explicitly frees up employees’ time for the purpose does learning occur with any frequency. (Garvin, 1993, p. 91)

Step 2 - Promote the Positive

(Includes Items 3, 9, 12, 14, 16, 21, 24, 28, 30, 31, and 34)

The next step in improving the learning environment is fostering an attitude of seeing the glass half full rather than half empty (Kline & Saunders, 1998, p. 68).

Mastering this step requires all MDS SCIEX employees to function at a level of maturity where individuals are treated with respect and everyone is encouraged to work together toward common goals. It appears MDS SCIEX is well on the way to accomplishing this, with specific areas for improvement.
Survey results show Item 3 (always possible to find a better way) and Item 12 (learning expected and encouraged across all levels) scoring extremely high. In fact Engineer/Designer and Technician groups rated these items among the highest in the survey, with the Scientist, Manager and Administrative/Corporate groups not far behind, reflecting an acceptance and appreciation of the value of learning throughout the organization.

Management Role

Items relating to recognition and respect for different learning styles (Items 30 and 31) indicate room for improvement. For example, 40% of Managers, 34% of Engineers/Designers and 25% of Administration/Corporate rated Item 32 (learning styles recognized to improve communication) as below 3, indicative of a potential concern with communication and individuality that is worth investigating.

Attitudes toward teamwork appear to be somewhat problematic as well. Item 14 ("lessons learned" sessions produce clear and permanent system changes) and Item 34 (teams rewarded for innovation) responses were skewed toward the lower scores. The Scientist and Administrative/Corporate groups are particularly dissatisfied with "lessons learned" sessions. Technicians and Managers indicate that team recognition is particularly problematic (59% and 53% respectively scoring lower than 3). These results suggest that Managers can benefit from improved strategies for managing knowledge gained from experience and encouraging team effectiveness.
In a learning organization, emphasis is placed on creating, capturing, and moving knowledge rapidly and easily so that the people who need it can access and use it quickly (Gephart et al, 1996, p.38). Companies must review their successes and failures, assess them systematically, and record the lessons in a form that employees find open and accessible (Garvin, 1993, p.85).

**Step 3 - Make the Workplace Safe for Thinking**

(Includes Items 1-6, 12, 14, 21, 24, 28, 30, 31, 34)

In today’s global economy, the price of failing to think well is too high to pay. Organizations must maximize everyone’s thinking and creative capacity and eliminate attitudes and systems that discourage them (Kline & Saunders, 1998, p. 92).

Group results for Item 28 (people encouraged and provided with resources to become self-directed learners) showed 66% choosing scores of 3 and 4, agreeing to a “moderate” and “great extent”. This is encouraging but leaves plenty of room for improvement.

A specific problem area appeared in the Administration/Corporate group responses, where 21% scored this statement as “not at all” reflective of MDS SCIEX. Given the relatively small representation of this group among respondents, this result should be interpreted with caution. It may, however, point to an inequity in support for learning within this group.
**Management Role**

Of particular relevance among these items is reaction to failure. Item 2 (mistakes turned into constructive learning experiences) was rated “moderately” true by most participants with a notable exception in Administrative/Corporate, where 29% selected “not at all” true. Item 6 (mistakes are viewed as opportunities) was also scored low, with the most common rating of 2 for Scientists (36%), Management (40%) and Administrative/Corporate (41%) groups.

Item 5 (experimentation encouraged as a way of doing business) responses appear to contradict these findings (77% of the total group scoring 3 or higher), but this may reflect a discrepancy between what is *communicated* and what is *practised*. Overall, attitude toward experimentation and errors should be further investigated to clear up this ambiguity. A learning organization improves the value of bold, creative thinking by encouraging it and then providing the structure, support and feedback necessary to improve it (Kline & Saunders, 1998, p. 100).

Highlighted in Step 2, Item 14 (lessons learned sessions produce changes) received more low than high scores, as did Item 21 (the unexpected viewed as an opportunity). Both Management and Scientist groups show a modal score of 2 for these items, indicating that these statements reflect MDS SCIEX only “to a slight extent”.

The survey results suggest that managers must exercise more openness and flexibility in incorporating new information into existing structures and systems. They
must be convinced that by defining and restructuring a system’s operating rules, they can continuously improve the system itself (Kline & Saunders, 1998, p. 244). Learning organizations ensure that individual and team learning contribute to systems-level organizational learning and that organizational learning leads to productive action (Gephart, 1996, p. 38).

*Step 4 - Reward Risk-Taking*

(Includes Items 1-3, 5-8, 14, 21, 25, 28, 34, 36)

In a competitive, high technology industry, it doesn’t make sense to take refuge in conformity and security. Taking meaningful, reasonable and moderate risks is becoming a prerequisite of survival (Kline & Saunders, 1998, p.112).

Item 1 (people feel free to speak their minds), a key element of risk taking, received an overall mid-range response, with Scientist and Engineer/Designer groups agreeing most strongly (75% and 62% chose scores of 4 or 5). This is an encouraging finding, given the destructive effect of fear on innovation, but leaves plenty of room for improvement. Employees must feel that the benefits of experimentation exceed the costs; otherwise, they will not participate (Garvin, 1993, p. 83).

*Management Role*

Overall response to Item 7 (willingness to break old patterns and try new ways of managing) was moderate, with 90% of scores falling in ratings 2, 3, and 4. Two notable pockets of disagreement were found among the Technician and Administrative/
Corporate groups, with 15% and 17% scoring 1 “not at all”. While these percentages only represent a total of 9 individuals, they may be indicative of a rigidity of systems or leadership within specific functions.

Overall reaction to Item 8 (management takes risks) leaned somewhat to the lower scores. Scientists rate this statement lowest (55% scored 2 or 1) with Technicians and Engineer/Designers not far behind.

For both these items, the management group spread their responses in low, even bell shapes around the “moderate” agreement score. In order to encourage risk-taking and innovative thinking in staff, leaders must adopt a bold and enterprising attitude toward knowing, learning and confronting problems. Over time, practice in risk-taking fosters better risk analysis and judgment improves (Kline & Saunders, 1998, p. 114).

If you want real, significant, sustainable change, you need talented, committed local line leaders. Find the people who are at the heart of the value-generating process - who design, produce, and sell products; who provide services; who talk to customers. Those value-generating activities are the province of the line manager, and if the line manager is not innovating, then innovation is not going to occur. (Senge in Webber, 1999, p. 186)

Step 5 - Help People Become Resources for Each Other

(Includes Items 4, 10, 12, 13, 16, 18, 19, 22, 25, 28-31, 34)

Sharing resources across the organization promotes patterns of interaction that strengthen an organization and generate better solutions (Kline & Saunders, 1998, p.133).

Learning organization theory proposes that, in the most adaptive organizations, every
member - whether on the front line or in the executive suite - is a strategic planner.

Teams act in creative and autonomous ways to interpret the strategic direction and make the plans happen. They coordinate and collaborate with others in the organization who are also experimenting with change (Redding & Catalanello, 1992, p. 52).

The distribution of responses for Item 4 (different views encouraged) is skewed in favour of the higher scores, with more than 80% of participants selecting 3, 4, or 5. This is indicative of a widely accepted or culturally entrenched belief at MDS SCIEX.

Scoring for Item 10 (sharing of learning with peers and organization) was predominantly moderate, leaving lots of room for improvement. The Scientist and Engineer/Designer groups lean slightly to higher scores, whereas the Manager and Administrative/Corporate groups lean slightly toward the lower scores. These results suggest that formal and informal methods for sharing knowledge could be further developed.

In many organizations, expertise is held locally: in a particularly skilled computer technician, perhaps, a savvy global brand manager, or a division head with a track record of successful joint ventures. Those in daily contact with these experts benefit enormously from their skills, but their field of influence is relatively narrow. Transferring them to different parts of the organization helps share the wealth. (Garvin, 1993, p. 87)

The overall distribution for Item 13 (awareness beyond function/specialty) scores is bell shaped, but leaning toward the lower scores. Most of the scores (73%) showed respondents agreeing only to a “slight” or “moderate extent”, similarly distributed across job groups. Too much work specialization means people doing jobs for which they will not see the end results, a factor found to inhibit organizational learning.
Management Role

Lower scores predominated for Item 18 (people are directed toward relevant learning opportunities). Specifically, 58% of Scientists, 55% of Managers, 46% of Administrative/Corporate and 42% of Engineer/Designers chose a rating of 1 or 2 ("not at all" or "to a slight extent"). Technicians’ responses reflected more of a bell shape around the “moderate” response.

The overall distribution of responses to Item 19 (cross-functional learning opportunities are organized) is skewed to the lower scores. The Scientist group scored particularly low, two-thirds scoring this statement at 2 or 1. Overall, 86% of participants found this statement “moderately”, “slightly” or “not at all” reflective of reality at MDS SCIEX (scores of 3, 2, and 1). Opportunities for cross-fertilization of ideas and solutions could be structured into work processes to reduce perceived distance between the functions.

It appears participants are eager to become involved in more learning opportunities, but don’t feel their managers are facilitating this or providing structures or systems for information sharing across groups.

[Organizational] boundaries inhibit the flow of information; they keep individuals and groups isolated and reinforce preconceptions. Opening up boundaries, with conferences, meetings, and project teams, which either cross organizational levels or link the company and its customers and suppliers, ensures a fresh flow of ideas and the chance to consider competing perspectives. (Garvin, 1993, p. 91)
Step 6 - Put Learning Power to Work

(Includes Items 2, 6, 9, 11, 12, 16-20, 22, 25, 27, 29-31, 33, 35, 36)

A learning organization is an environment where everyone from top to bottom is passionate about learning for their own improvement and the improvement of the organization.

Item 36 responses (staff enabled to improve), skewed somewhat to the higher scores among all groups except Managers, are indicative that staff acknowledge their responsibility in the learning process.

Management Role

Responses to Item 17 (there are clear expectations of number of hours of education annually) were predominantly low, including some of the lowest scoring of the Survey. Overall, 25% indicated this statement was “not at all” reflective of reality at MDS SCIEX (25% of Scientists, 20% of Engineer/Designers, 18% of Technicians, 30% of Management, and 42% of Administrative/Corporate scored this as 1). Amount of permitted learning hours appears to be a topic in need of improved clarity and communication.

Managers must recognize that positive learning experiences are self-rewarding and generate more learning energy. Managers’ responses to Item 27 (difference between training and learning is understood), 65% rating 2 or 1, suggests they acknowledge a need for greater understanding of how to maximize learning opportunities for their staff.
Managers could benefit from programs that help them wrestle with learning issues and build understanding of learning processes relevant to the workplace (Buckler, 1998, p. 19).

In learning organizations, leaders and managers at all levels provide critical support to the learning and development of individuals and teams by:

- modelling learning behaviour
- providing systems that facilitate learning
- encouraging people to contribute new ideas
- ensuring the dissemination of knowledge and learning
- freeing resources in order to signal the organization's commitment to learning and sharing leadership (Gephart et al, 1996, p. 39)

**Step 7 - Map out the Vision**

(Includes Items 4, 7, 10, 19, 20, 22, 25, 27, 29, 30, 31, 33, 35, 36)

In a learning organization, each individual thinks in terms of a personal future that's related to the future of the organization. This develops through participation, communication and connection among individuals and groups throughout the organization. A shared vision provides the focus and energy for learning (Senge, 1990, p. 206), and the motivation for many creative minds to come together in a common enterprise (Kline & Saunders, 1998, p.188).
Several of the survey items addressed in Step 5 are relevant to this step as well. and indicate that there is a great deal of room for improvement of cross-functional information sharing and learning. Access to organizational information to create shared experiences is considered a factor facilitating learning and innovation, broadening understanding and building relationships.

For learning to be more than a local affair, knowledge must spread quickly and efficiently throughout the organization. Ideas carry maximum impact when they are shared broadly rather than held in a few hands. A variety of mechanisms spur this process, including written, oral, and visual reports, site visits and tours, personnel rotation programs, education and training programs and standardization programs. (Garvin, 1993, p. 87)

Management Role

As noted earlier, Item 4 results (different views and open productive debates encouraged) were skewed in favour of the higher scores, with more than 80% of participants selecting 3 or higher. The perception that management is actively learning more about facilitating, coaching and leading (Item 31, with 76% rating 3 or higher) also indicates optimism about the potential for individuals to influence their environment.

[Poor management practices are considered by some to be a] direct consequence of a poor level of understanding by managers of the processes by which people in organizations learn ... an understanding of the learning processes is a key requirement for the facilitation and optimization of improvement and innovation in business processes. (Buckler, 1998, p.16)

Step 8 - Bring the Vision to Life

(Includes Items 4, 7, 10, 19, 23, 26, 30, 31, 35)

Translating a corporate vision to everyday organizational life requires the participation and commitment of all employees. Several of the Survey items grouped
under this step have been commented on in earlier sections of this report. These include items addressing the degree to which systems are flexible, how managers cope with change, practising as well as preaching continuous improvement, as well as awareness and appreciation of different learning styles.

The suggestion from the responses to these items is that MDS SCIEX as an organization could be more responsive in managing both internal and external knowledge. Specific information gathering in the form of focus groups, and group problem solving to determine ways to make systems more flexible and enhance communication, could provide valuable solutions and create greater efficiency.

*Step 9 - Connect the Systems*

(Includes Items 5, 11-13, 19, 23, 32, 33, 35)

As indicated by the response to Item 11 (the organization is perceived to be designed for problem-solving and learning) there is optimism about MDS SCIEX’s capacity for growth.

Group results indicate a bell shaped distribution of responses, skewed slightly to the higher scores. Approximately 45% of respondents agreed with this statement to a “great” or “very great extent”, with the Engineer/Designer and Management groups rating highest. The greatest diversity of scores within a job group appears in the Administrative/Corporate group, with 38% rating agreement to “a great extent” and 21%
agreeing "not at all", indicating very uneven perception of this message across this job group.

This step, like the previous one, addresses communication throughout the organization. As the analysis of survey items throughout the previous steps indicates, cross-functional knowledge sharing and problem-solving strategies would potentially address many of the concerns raised, and enhance organizational learning greatly.

**Management Role**

Middle management provides a critical axis between the strategic learning of senior management and operational learning at the front lines. They are at the midpoint in educating upwards from operations as well as translating new vision and direction into operational reality (Burgoyne, Pedler & Boydell, 1995, p. 16).

Response to Item 33 (there is direction set and resources allocated to bring about meaningful and lasting learning), predominantly lukewarm, combined with other items detailed in this report, indicate many practical learning issues still need to be addressed, particularly within the Administrative/Corporate group.

Once managers have established a more supportive, open environment, they can create learning forums. These are programs or events designed with explicit learning goals in mind, and they can take a variety of forms: strategic reviews, which examine the changing competitive environment and the company's product portfolio, technology, and marketing positioning; systems audits, which review the health of large, cross-functional processes and delivery systems; internal bench-marking reports, which identify and compare best-in-class activities within the organization; study missions, which are dispatched to leading organizations around the world to better understand their performance and
distinctive skills; and jamborees or symposiums, which bring together customers, suppliers, outside experts, or internal groups to share ideas and learn from one another. Each of these activities fosters learning by requiring employees to wrestle with new knowledge and consider its implications. (Garvin, 1993, p. 91)

Step 10 - Get the Show on the Road

(Includes Items 7, 8, 12, 22-24, 26)

Kline and Saunders' Step 10 concerns the growth potential of the organization, and ways to maintain the momentum which can be built into the process of becoming a learning organization. Survey Items 7 (willingness to try new ways), 8 (management takes risks), 12 (learn across all levels), 23 (systems are flexible), and 26 (improvement not just talk) reflect key components of maintaining the dynamic energy that fuels innovation and adaptation. They are important elements of the “drama” necessary to focus and energize an organization’s internal activities and its approach to the world.

Results of Item 22 (people look forward to improving their own competencies as well as those of the whole organization) paint an optimistic picture of MDS SCIEX’s capacity to harness this drama and motivation. The majority of responses to this item (79%) were scores 3 and 4, with the rest of the ratings tapering off higher and lower, but only 2 individuals choosing the lowest score (1% of total) and 14 selecting the highest score (10%).

Learning organizations are not built overnight. Most successful examples are the products of carefully cultivated attitudes, commitments, and management processes that have accrued slowly and steadily over time (Garvin, 1993, p.91).
Peter Senge, in his book "The Fifth Discipline" (1990) sees the evolution of the learning organization as a never-ending, iterative process. An adaptive organization needs always to be practising the disciplines of promoting personal mastery, deconstructing mental models, building shared vision, enhancing team learning and encouraging systems thinking. Attention to integrating the development of these disciplines within all levels at the same time ensures that the whole will exceed the sum of its parts, fostering long term competitive advantage for the organization, and a healthy work environment for its employees.

Summary

MDS SCIEX has made progress over the past four years in a number of key areas related to learning. Scientist and Engineer/Designer groups feel encouraged to speak their minds (Item 3, 75% and 62% respectively scored higher than 3) which is critical to preserving the innovative nature of the culture. This is further supported by the fact that most employees agree that different views and open productive debates are encouraged (Item 6, more than 80% of participants selected 3 or higher). Increased tolerance for diverse thinking adds to the richness of the learning experience and contributes to creative business solutions and products. There is a clear perception that management is actively learning more about facilitating, coaching and leading (Item 31, 76% rating 3 or higher), a fact that mitigates some of the dissatisfaction with management skills mentioned earlier. MDS SCIEX has spent a considerable amount of resources assisting managers at all levels to hone their leadership skills. While the organization
acknowledges that this is a long-term commitment, the incremental changes can be felt throughout the company.

As with all enterprises, there is always room for improvement. MDS SCIEX needs to address a number of obstacles to learning. Specifically, more attention is required on workload and stress, innovation and risk taking, learning from experience and adapting, and employees learning from each other. Two employee groups, Management and Administrative/Corporate, find day-to-day operations stressful beyond the "healthy" degree, eclipsing most or all reflection time (Item 27).

Innovation and risk taking could be enhanced with changes in management style. When asked about management's willingness to break old patterns and try new ways of managing (Item 9), overall response was moderate, and lower among the Technician and Administrative/Corporate groups. Overall responses to Item 10 (management takes risks) leaned somewhat to the lower scores. Scientists rate this statement lowest (55% scored 2 or 1) with Technicians and Engineer/Designers not far behind.

Regarding managers' skills for gathering information and developing their abilities to cope with demanding and changing management situations (Item 37), managers rated themselves higher more often (50% rated themselves 4 or 5) than did those reporting to them (only 25% rated them 4 or 5).
MDS SCIEX needs to continue to endorse and encourage risk taking and innovation in managers, who must in turn pass along this approach to their staff. As Max Depree (1989) states, “Life is more than just reaching our goals. As individuals and as a group we need to reach our potential. Nothing else is good enough. (p. 50) This approach to shaping work will result in a confident work force ready and able to experiment and challenge the status quo.

The third area for improvement requires the organization to make a concerted effort at all levels to capture what has been learned from decisions and actions related to meeting the business goals. The Scientist and Administrative/Corporate groups are particularly dissatisfied with “lessons learned” sessions (Item 16, 73% and 59% respectively scored below 3). Turning mistakes into constructive learning experiences (Item 4) was rated as “moderately” true by most participants with a notable exception in Administrative/Corporate, where 29% selected “not at all” true. Viewing mistakes as opportunities (Item 8) also scored poorly, with a modal rating of 2 for Scientists (36%), Management (40%) and Administrative/Corporate (41%) groups.

The survey results suggest that managers must exercise more openness and flexibility in incorporating new information into existing structures and systems. They must be convinced that by redefining and restructuring a system’s operating rules, they can continuously improve the system itself (Kline & Saunders, 1998, p. 244).
The last opportunity for change lies in the value of sharing and exchanging acquired knowledge and experience. Scoring for Item 12 (sharing of learning with peers and organization) was predominantly moderate, leaving lots of room for improvement. The overall distribution for Item 15 (awareness beyond function/specialty) scores is bell shaped, but leaning toward the lower scores. The overall distribution of responses to Item 21 (cross-functional learning opportunities are organized) is skewed to the lower scores. The Scientist group scored particularly low, two-thirds scoring this statement at 2 or 1.

Opportunities for cross-fertilization of ideas and solutions could be structured into work processes to reduce perceived distance among the functions. Formal and informal methods for sharing knowledge could be further developed in order to maximize opportunities to improve efficiency.

Focus Group Findings

The focus group questions were organized according to the three themes of leadership, rewards and recognition, and evaluation. Participant responses are reported based on the two groups of respondents: managers and employees.

Leadership and Learning

The first twelve questions explore aspects of leadership and skill transfer related to survey ratings that suggested potential issues.
1. Do managers have the skills to manage their employees’ development? What is the gap today?

Employees had some strong feelings with respect to their manager’s support in their personal development. While it was indicated that some managers were supportive, leaving training choices up to the employee, most of the responses reflected a distinct lack of support from managers in this area. Employees felt they were discouraged from taking courses due to the inconsistent criteria for approval used by the managers. Favoritism was mentioned in conjunction with these comments. Employees felt managers should be held accountable for helping to develop their staff. It was suggested that accountability would be achieved through appraisals of managers by employees, provided MDS SCIEX took this feedback seriously.

Managers are suggesting they need more direction and information on how to assess what employees need in their current and future roles, in order to determine which activities would be most appropriate for development. Concerns expressed included the challenge of managing the workflow of employees who are on training courses, as well as the unrealistic expectations of employees in terms of their development plans. An additional issue is that after MDS SCIEX develops employees, they are better equipped to leave for a position with a competitor.

2. What percentage of employees’ development is guided/supported by the manager?

Employees mentioned inconsistent practices among managers with respect to this question; some managers allow employees to choose their own development paths, others
tend to control the process. Some managers do not communicate their expectations, so that the performance appraisal and development systems work better for some than for others. The consensus was that employees should be able to take more responsibility for their own development, with assistance and input from the manager.

3. What are some ways managers could help their staff develop?

Employees would like managers to be specific in their recommendations for training by guiding employees to courses most appropriate for career development. While employees recognize that managers have to concentrate on meeting business objectives, they proposed that sufficient time be allotted to more in-depth performance appraisals and that managers be encouraged to support company wide training strategies such as Six Thinking Hats (deBono, 19--).

Managers requested career planning training that would provide the tools to better understand employees’ career development needs. A list of required hard and soft skills requirements for each position would be useful in identifying appropriate training. Providing opportunities for on the job learning and job rotation would also be beneficial to the employees’ development.

4. What are some systems and policies that could be made more flexible to encourage learning?

The main area of discontent for employees lies in the current performance management process, although there was no consensus on the changes needed.
Employees also felt that managers should not have such wide discretion in setting and interpreting policy. A desire for equal access to computers and information was voiced. The selection process for in-house courses was not seen as contributing to performance development.

Managers approached this issue very differently by stressing the need to hire people who enjoy sharing information and working in a team environment. More recognition would be given to people who synthesize data, harvest ideas, and find new applications for existing solutions.

5. What are some ways that knowledge can be better distributed within the organization?

Employees recommend more courses for all employees on the business fundamentals, encouraging people to educate others, and more technical courses. Implementing cross-functional meetings as well as a knowledge management system will help MDS SCIEX avoid problem solving duplication. People would like the opportunity to spend time in other departments, including short-term lateral moves. Another suggestion was to promote updating and information sharing sessions about what is going on in all departments so people know how their job fits into the big picture. The consensus was to open communication channels at all levels to encourage transfer of knowledge.

Communication is a key theme running through the managers' responses to this question. They suggest a central source of information, an individual who has the ability
to keep each department informed about what is going on in different areas. A steering committee would be helpful in identifying needs and opportunities for learning. It would be useful to appoint a functional area contact person who would be able to respond to employees’ questions. Other suggestions included weekly meetings; more frequent and informal managers’ meetings to inspire and harvest new ideas; a newsletter highlighting both successful and unsuccessful efforts around the company. Managers also agreed with employees that job rotation and/or short-term lateral moves would promote knowledge distribution.

6. Are there barriers to learning at MDS SCIEX?

Lack of available financial resources may be a factor in limiting training, and it was suggested that the company should offer more training and learning in spite of this. One way of demonstrating that people are valued is to hold managers accountable for providing learning opportunities for their staff. The learning program calendar release date should coincide with performance appraisal time so that managers and staff can discuss the courses together. Recognition for employees who come up with improved ways of doing things would encourage innovation in the work place.

Managers pointed out several barriers in this area, including noise levels, lack of time, employees not taking responsibility for their own learning and lacking a defined career path. One suggestion was to set a learning objective and permit everyone time to read or study new information in a quiet environment at a specified time.
7. What are some ways that differences could be better valued across the organization?

One suggestion from employees in response to this question was to have experts from across the organization share their knowledge in short segments within product-related seminars. Implementing a team approach to work rather than the hierarchical model, and allowing people to choose how to spend their training hours without having to first obtain permission, would encourage respect for differences across the company.

Managers recommend awarding people merit points for rotation to meaningful work in other departments and, in fact, make rotation a requirement of the job and a condition of the offer of employment. Offering social activities around cultural themes would also encourage people to value differences among the employee population.

8. How could MDS SCIEX incorporate appreciation of different styles into our current training practices?

To prevent having to rewrite procedures, employees suggest consulting and collaborating with the end users during the design stage. Technical training documents should be written with users in mind, and this could be accomplished through improved communication among functions.

Managers recognize the different learning styles of people and suggest several ways to address the issue, including offering the same course twice, one for those who learn best by doing and one for those who learn best by reading. A needs assessment would target the audience and their learning style before the course is scheduled; the
assessment could gather information about learning style from the employees themselves by conducting a skills inventory. The skills inventory would assist the manager in planning learning for the staff as well as provide information to the learning steering committee responsible for setting up the courses.

9. Why do you think the self-directed learning options in the learning calendar have not been used?

Employees indicated that the books, particularly those related to IT, were outdated; some people do not have the time or computer skills to use the self-directed learning CD’s and some staff forget that we have the resources available. One suggestion was that the Human Resources team should develop slide presentations about the in-house resources.

Managers cited lack of time and energy as well as poor communication and visibility of the self-directed learning program resources as reasons for poor usage of the program.

10. How would you rank the importance of learning in non-technical areas?

Employees rated non-technical training as a low priority, while managers felt that non-technical learning is very important and would like to see it continue and expand. This could be accomplished by providing trainers who have had relevant work place experience and by developing broader topic ranges. There was a feeling that some peers and supervisors do not acknowledge the non-technical learning as important. There was a
comment that there is a limit to development in terms of individual’s “soft skills” and therefore a limit to the viability of this type of training.

11. To what extent do you think formal or informal learning is important to the company’s financial success?

Employees feel that learning is not stressed enough, and suggest that if the impact of training were measured, managers would take it more seriously.

There are a number of responses from managers to this question, ranging from the idea that the majority of employees don’t think soft skills learning is as important as hard skills learning, to comments that although hard to measure, this training is strategic, with a long-term impact contributing to the bottom line. Development of interpersonal skills and a learning attitude are mentioned as being important for managers and employees alike.

12. Would you feel comfortable discussing your development needs with your manager?

The comfort level for employees to engage in discussion about learning varies; some staff feel very uncomfortable talking with their manager while others may have great relationships with their managers and are able to partake in this type of discussion.
Rewards & Recognition and Learning

Five questions further probed the issue of learning and rewards.

1. Are there penalties for mistakes in the non-technical aspects of your job?
   
   Employees indicated that managers and peers sometimes discourage implementation of new skills. Although managers suggest that attitudes across the company vary with respect to how mistakes are viewed, there is a feeling that mistakes are penalized and people are held accountable for their mistakes. They feel that career advancement could be limited as a result of employees’ lacking good soft skills.

2. How can MDS SCIEX encourage experimentation and risk-taking?
   
   The current performance appraisal system is cited as a deterrent to experimentation; it is felt that managers tend to remember mistakes and will revisit the issues at appraisal time.

   Managers approached this issue with several positive suggestions. Recommendations included promoting risk taking by turning mistakes into opportunities, by sharing the learning experience with others and by clearly and frequently communicating that managers will be supportive of employees who are willing to experiment. Sharing the burden of corrective actions, encouraging peer coaching in analyzing the situation and rewarding people as their performance improves in this area were mentioned as appropriate approaches to this issue.
3. **What are some ways to turn mistakes into constructive learning experiences?**

Employees suggest that managers be trained in how to promote risk taking, as well as in how to provide sincere feedback on problems/mistakes.

A proactive approach is apparent in the managers' comments with respect to this question. Preparing and implementing a back-up plan for any extreme risks would help to minimize costs while working through potential mistakes. The corrective actions would be a collaborative effort between the employee and manager. It is important to communicate the importance of encouraging risk taking; in doing so, employees would be reassured that they would not be punished for their mistakes and that a solution is always available.

4. **How can managers be encouraged to value learning for themselves and for their employees?**

Employees feel that the corporate focus is on getting the product out the door rather than on employee development. It is recommended that the impact of training be measured and that managers be accountable for staff development.

Managers propose a number of incentives for learning, including integrating it into work objectives by devoting a certain amount of time to coaching their staff. Managers should be held accountable for development in this area by the senior management team, and they suggest that the senior management team communicate and support the importance of learning. Allowing all employees access to a career
development specialist and/or training a group within the company to act as career coaches would assist the managers in this area.

5. What are some ways MDS SCIEX could encourage all staff to improve their competencies?

The responses from employees reflect a desire to have more control over their own choice of training. The training and instructor selection should be based on input from everyone in the company, and training providers should be prepared to provide MDS SCIEX with evaluation ratings from other clients. Course titles are sometimes misleading; more specific course descriptions are required. Evaluations completed by employees should be posted and an instructor/training with a poor evaluation should not be rescheduled. Employees also request technical skills training be emphasized more.

Managers recommend rewarding staff by such things as free lunches, cash to be spent on courses, and awarding development credits to be used in determining promotion, compensation and performance appraisal ratings. Candidates for employment at SCIEX should be informed that continuous learning is expected. Current employees need more education about the long-term value of learning with respect to career development. Other suggestions include making learning fun, offering a variety of courses and customizing courses for job specific, just-in-time training.
Transfer of Skills, Evaluation and Learning

Four questions on this theme supplemented the survey results.

1. Do new skills and knowledge get applied on the job? Why?

There were only two employee responses to this question; both indicate that learning is sometimes applied to the job but there is little follow-up by others. Managers had similar responses to this question, suggesting that there is little assessment of the impact of the training.

2. What actions should managers take to help employees use their skills on the job?

The consensus from employees was that the trainee should share the new knowledge with his or her group and manager so that the value of the training is put into practice in the department. A monitoring system should be in place whereby the manager observes how the training is being applied and the employee advises the manager, possibly at his performance review, how the new skills have been applied. Not all employees agreed, and some felt that they should not be held accountable for applying the training.

Managers believed that trainees should be held accountable for applying the newly acquired skills, and they suggest this can be facilitated by encouraging the employee to share the information with the work group and by providing project opportunities for the employee to practice the new skills.
3. **What are some reasons employees complete or don’t complete surveys related to learning or culture?**

There were a number of responses which had a similar theme: lack of time and interest; limited or no access to computers; apathy; survey too long; return time too short. Employees also felt that the questions were not specific to work issues.

Managers had a slightly different view from the employees. Their comments ranged from the perception there is nothing to complain about and employees are very happy, to the thought that employees are very unhappy and cynical, believing there will be no impact as a result of the survey. Lack of time was also cited as a reason for not completing the survey.

4. **What expectations do you have about the use of survey results related to learning activities at MDS SCIEX?**

Employees do not have high expectations about the survey results. While they would expect to see the survey results published and subsequent changes occur, generally they are not optimistic about this happening. There are issues of outcomes being slow to be communicated or not being communicated at all; there is distrust about any significant changes being implemented; opinions are given but no action is taken.

Managers’ responses echoed the employees’ responses: low expectations that staff will know what to do with the results; relatively minor changes will occur; questions on the survey do not probe for real problems (“sanitized.”)
Chapter 5: Discussion and Recommendations

It is my hope that the insights gained in this case study of MDS SCIEX will increase understanding of the practical implications of developing organizational learning capacity and culture. I also hope that the research provides MDS SCIEX with additional insights on the effectiveness of its learning initiatives, and that the recommendations provided are seen to be useful improvements that could strengthen the contribution of these initiatives.

Leadership and Learning

Current research suggests that effective leaders display certain behaviours and attitudes which foster experimentation, generation of knowledge and a commitment to life-long learning at all levels. Effective leaders view mistakes as opportunities for growth and demonstrate this by inviting challenge and honest feedback. The most successful leaders promote and encourage personal and professional growth in their employees, and are themselves students of the world.

In order to maximize both the growth experience and the return to the business, people must be encouraged to challenge the status quo without fear of punitive consequences and share information and ideas unreservedly. The effective leader recognizes the need for tapping into other people’s knowledge and helps give voice to ideas and dreams.
Results from the survey and the focus groups in the research for this study capture the essence of leadership and learning at MDS SCIEX. This is the basis for comparison with current literature about the attributes of leadership that support learning. While the survey points to several elemental strengths in the leadership group at MDS SCIEX, there is a strong indication of a need of to improve in key areas to support individual and organizational learning. It is not uncommon that technology-driven organizations are more comfortable with, and adept at, dealing with technical and financial issues than responding to the people side of the business. Increasingly however, there is a growing recognition that the technical and business challenges can best be resolved if the organization creates a responsive and supportive culture for its employees. Key elements of this culture include: defining and communicating the business vision; enabling freedom of thought, speech and action; connecting the systems; and encouraging learning and development.

Business Vision

Kotter (1996) states that transformation cannot occur in the absence of direction. Nor should we think that vision alone can remove all obstacles to change. More realistically, a clear sense of direction provides context for decisions and actions and serves as a “base camp” when there is a need to regroup. Confusing signals increase anxiety, a natural inhibitor to learning, and drastically slow the change process for the individual and the organization.

In a learning organization, each individual thinks in terms of a personal future that is related to the future of the organization. This develops through participation,
communication and connection among individuals and groups throughout the organization. A shared vision provides the focus and energy for learning (Senge, 1990), and the motivation for many creative minds to come together in a common enterprise (Kline & Saunders, 1998). Several of the survey items are relevant to this topic and indicate there is a great deal of room for improvement in information sharing and learning.

Translating a corporate vision to everyday organizational life requires the participation and commitment of all employees. The suggestion from the responses to these survey items is that MDS SCIEX would benefit from communicating the divisional goals in a manner that would help people link their roles to the overall objectives of the company. Minimally, a description of the technical and non-technical skills required to facilitate growth would assist managers and employees in their discussions on development.

Freedom of Thought, Speech and Action

A strong indication of MDS SCIEX's commitment to collect employee feedback is the practice of conducting regular surveys on a variety of topics. In particular, the organizational learning survey upon which this research is based is an example of the desire to understand the employees' perceptions on learning in the company. Item 4 in the survey (different views and open productive debates encouraged) was skewed in favour of the higher scores, with more than 80% of participants selecting 3 or higher. These responses seem to contradict doubts expressed in earlier satisfaction surveys that action would be taken as a result of survey results. These new attitudes expressed above
may reflect MDS SCIEX's efforts over the past four years to regularly communicate decisions and implementation plans.

In today's global economy, the price of failing to think well is too high to pay. Organizations must maximize the thinking and creative capacity of people and eliminate attitudes and systems that are obstacles (Kline & Saunders, 1998). Survey Item 1 (people feel free to speak their minds), a key element of learning, received an overall mid-range response, with Scientist and Engineer/Designer groups agreeing most strongly (75% and 62% chose scores of 4 or 5). MDS SCIEX has created an environment in research and engineering where curiosity is an asset often leading to innovative solutions. Given the high-technology nature of the work in these two functional areas, one can understand why these employees are given wider latitude in their explorations. Often the answers have not yet been invented, so the need to be creative, test, fail and start again is critical in designing the next innovation that will capture the leadership position in the marketplace. Expanding this cultural characteristic to the other functional areas could result in improved effectiveness and an increase in challenging work. Employees must feel that the benefits of experimentation exceed the costs; otherwise, they will not participate (Garvin, 1993).

A rating of 3 or higher was given by 77% of respondents to survey Item 5 (experimentation encouraged as a way of doing business), again demonstrating a belief that experimentation is important to finding new solutions and creating new products and services. MDS SCIEX needs to be watchful that other systems and practices are not
becoming obstacles to this belief (see Item 2, mistakes turned into constructive learning experiences). “A learning organization improves the value of bold, creative thinking by encouraging it and then providing the structure, support and feedback necessary to improve it” (Kline & Saunders, 1998, p. 100).

A generally accepted norm seems to be that it is always possible to find a “better way” (Item 3). Scores for Item 7, indicating the level of willingness to break old patterns and experiment with new methods of working, ranged from relatively low to moderately high, identifying a need for less rigidity in some functional areas. Overall focus group results pointed out that improvement in the area of risk-taking is needed. Managers believe that there is a lack of a recognition and reward system for employees who are innovative in finding new applications for existing solutions. Without appropriate reward mechanisms, organizations cannot effectively reinforce the desired behaviors related to innovation and risk-taking.

**Connect the Systems**

The best vision and beliefs about development will not come to fruition if, through their design, the operational systems limit success. Organizational systems cover a broad array of programs, practices and policies that send clear messages to employees about the value system of the enterprise. They include hiring and orientation practices, performance management, compensation and incentives, flexible work hours, quality, continuous improvement, bereavement leave, and so on. While they may appear unrelated to learning, they set a climate that can signal acceptance of differences, respect for the individual, tolerance of risk, and mutual trust. The survey and focus groups
provided some insight into where improvements are needed.

At MDS SCIEX, two general culture items, Item 9 (quality of work life improving) and Item 23 (systems, policies are flexible) were both rated with moderate agreement by the majority of respondents, indicating no serious complaints, but leaving lots of room for improvement. Focus group participants suggested that changes to the performance management system would enhance the motivation to learn. Some employees felt uncomfortable with the "wide" discretion accorded to managers in the setting and interpretation of policies, signalling a potential issue with the level of trust between some employees and their managers. As MDS SCIEX has evolved into a more complex organization, the anxiety of many managers has increased. They are the managers who need rules and regulations to justify their decisions to their employees, or who prefer to blame the policies rather than make a judgement that could be unpopular.

Another item limiting learning was seen to be the registration process for in-house learning activities. The current lottery method was not seen as contributing to performance development. When asked if there were barriers to learning at MDS SCIEX, respondents assumed that financial resources were limited for training activities. Employees requested that managers be held accountable for the development of their people, suggesting that many employees do not have access to a process that ensures a discussion about growth opportunities. Managers added other barriers to learning such as the levels of ambient noise and lack of time. They adopted a slightly different view from that of employees by contending that employees need to take responsibility for their learning and career development with realistic expectations of the organization's ability
to respond.

Items related to continuous improvement attitudes and practices reflect a somewhat more positive perception. Group scores for Item 16 (improvement expected, treated receptively), Item 22 (eagerness to improve competencies), and Item 26 (improvement not just talk) were predominantly at 3 and above, indicating an awareness and acceptance of improvement of self and the organization as a corporate priority. These results are consistent with the learning organization vision of a community that nurtures, values, and supports the development and learning of every individual (Gephart et al., 1996).

Responses relating to work load and stress, Items 25 (stress is manageable) and 32 (time for reflection), indicate that both the Management and Administrative/Corporate groups find day-to-day operations stressful beyond the “healthy” degree, eclipsing most or all reflection time. Time for self-development and reflection is considered a vital factor in facilitating learning (Buckler, 1998). Perhaps this finding is exacerbated by the lower scores in Item 15 (practices, policies, etc. that become obsolete and removed or replaced), where dealing with cumbersome bureaucracy increases stress. The perception and experience of stress is very personal. In a society where the victim mentality dominates, it is hard to understand whether the complaints about stress stem from lack of personal responsibility, being fearful of disappointing others, or a need to blame someone for a perceived lack of choices. Whatever the beliefs behind the feelings of stress, an organizational culture can be limited by the perceived level of stress and the
organization's response to these issues.

In addition to the above systems, the focus groups identified communication as a key tool in need of further development. Specifically, the level of comfort on the part of the employees in discussing learning matters with managers tended to be on the low side. This is potentially a serious obstacle to learning and needs more discussion to determine the depth of the problem. A number of factors contribute to this unease: the manager's limited skills in creating a comfortable setting for employees to voice their career aspirations, even if it means hoping to move into the manager's position; ignorance on the part of employees and managers of the options and choices available; limited or unknown tools and resources, successful development activities not tied to compensation for both employees and managers; senior management needing to take more interest; and not making development a strategic priority.

Over the past 3 years, MDS SCIEX has made tremendous strides in revising the key organizational systems to ensure that they reflect the stated values of the organization. In 2000, this review has resulted in new designs in compensation and employee policies, and the introduction of a Balanced Living program to ease the general stresses of life. Recognizing that expertise was required in the area of communication, MDS SCIEX hired a Communications Manager to lead the implementation of new tools to enhance the sharing of information.
Learning and Development

As described in Chapter 4, MDS SCIEX crafted a learning strategy in 1996 which laid the foundation for the Learning Program. The mandate of this program is to provide developmental opportunities for non-technical skills, leaving technical currency to the individual functional areas. In addition to formal activities, the organization engages in regular process checks designed to understand outcomes and results, and geared to transplant new insights to the next business initiative. Both survey results and focus group findings are rich with information on how well the organization performs in this regard, with suggestions for change. A number of the survey questions relate to the ability of managers to develop themselves and their staff. These questions capture both attitudes and practices.

Item 2 (mistakes are turned into constructive learning experiences) was rated moderately, while Item 11 (organization perceived as designed for problem-solving and learning) was rated moderately high. One of the highest rated items across all groups was Item 12 (learning is expected and encouraged at all levels), reflecting the general appreciation of this expectation throughout the organization. Use of the “lessons learned” strategy (Item 14) was rated low with 73% of scientists disagreeing that these sessions are conducted to produce clear and permanent changes to systems and practices. This is in contrast with the moderately high rating of Item 26 on the practice of continuous improvement. Although it appears that MDS SCIEX is using improvement techniques, the mixed responses indicate that they are not used to the degree they could be, possibly losing opportunities for increased effectiveness. A prime factor may be the
lack of human resources, thereby limiting the available time for such exercises. Over the past five years, MDS SCIEX, like most high-technology companies, has had difficulty recruiting new employees at a pace that matches its rate of growth. The consequence of this is the need to meet business goals with the current employee population. In this scenario, the main focus is to meet the research, product and delivery targets with little time available for introspection or sharing knowledge. Focus group findings show that employees feel that learning is important to the company's financial success, and might be receptive to learning and using new tools.

The second grouping of responses deals with the role of managers in the development of themselves and their employees. Organizations who resist turning the task of development over to their employees, with managers and peers acting as coaches and mentors, promote a climate that is not conducive to the spirit of organizational learning. It is helpful to restate Senge's (1990) definition of a learning culture as a situation in which "people continually expanding their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together" (p. 3).

The slightly lower scores in Item 20 (middle managers seen as having primary role for the learning process), the moderate scores in Item 31 (management is sensitive to developmental differences), and slightly high scores of Item 36 (managers enable their staffs to learn how to improve their performances) tell us that respondents do not feel that
managers drive the development process, that managers could do better in recognizing individual learning preferences and that managers do only a fair job of helping their staff grow. Perhaps managers do not believe that it is their roles do lead the development charge. Since the MDS SCIEX Learning Program is directed by the Human Resources (HR) function, managers may believe that HR is also responsible for career development. While most managers do a very good job of ensuring that their employees have the current technical skills, their discomfort stems primarily from their roles in supporting growth in non-technical areas. Clearer definition of roles for HR and managers is needed to support employee development.

Employees in the focus groups had some strong feelings about to their managers' support of their personal development, with most of the responses reflecting a distinct lack of support from managers. Inconsistent criteria for approval of training requests and favouritism were mentioned. Managers suggested that they required more direction and information on how to assess what employees need in their current and future roles, in order to determine which activities would be most appropriate for development. When asked about the degree to which managers guide employee development, employees mentioned inconsistent practices among managers. The consensus was that employees should be able to take more responsibility for their own development, with assistance and input from the manager. Offering employees more control over their destinies can only benefit the organization, and liberate managers to assume the role of coach rather than that of controller.
The type of assistance employees would like from their managers is that they be more specific in their recommendations for training by giving examples of expected behavioural outcomes. While employees recognize that managers have to concentrate on meeting business objectives, they proposed that sufficient time be allotted to more in-depth performance appraisals. Managers requested career planning training that would provide the tools to better understand employees' career development needs. The most troubling comments centered around the level of comfort all employees have in discussing their development needs with their managers. Some employees have positive relationships with their managers and engage in a dynamic development process. In far greater numbers, are employees who do not feel able to talk about their growth objectives with their managers. While this has been examined earlier in this section, MDS SCIEX needs to build confidence in employees, and skills in the managers, to allow for open dialogue on the topic of development. The absence of trusting relationships is impeding organizational growth and, in the long-term, will become a significant retention issue.

The final aspect of learning and development to be examined addresses the individual and team roles and responsibilities in the learning process. Item 10 (methods of sharing with peers and the organization) earned a rating of 3; Item 18 (people are directed to learning opportunities) scored a moderate response; a low score was obtained for Item 19 (cross-functional learning is expected and organized regularly); respondents rated Item 28 (people are provided with resources to become self-directed learners) slightly higher; and last, 79% of responses to the statement in Item 22 (people look forward to improving their own competencies) reflected agreement to a moderate and great extent. Ideally, the organization wants to capture the positive view toward learning
as stated in Item 22, and develop methods that improve the learning channels identified above. Sharing resources across the organization promotes patterns of interaction that strengthen an organization to generate better solutions (Kline and Saunders, 1998).

Overall, MDS SCIEX is in an moderately positive position with respect to the leadership attributes and practices that give life to individual and organizational learning. More efforts could be invested in setting clear expectations related to development, followed by the enhancement of current techniques for the sharing of knowledge. Managers need to understand their crucial role in talent development and need to acquire the coaching skills to facilitate the process. All employees must take an active part in the development process and be held accountable for how those activities can benefit the business.

**Rewards & Recognition and Learning**

Most organizations aspire to adopt the attributes of the “learning organization”. They believe that skilled and involved employees can have a positive impact on meeting business goals as well as increasing general employee satisfaction. While much has been written on how to identify and implement the systemic changes required to become a learning organization, little can be found in the literature on the best design of rewards and recognition practices to support these initiatives.

A review of the definitions of a learning organization is helpful in setting the context for learning incentives. Lessem defines a learning organization as one that “...
facilitates participative (horizontal) and innovative (vertical) development within and between people and institutions ... commercially, technologically and socially. It thereby transcends not only the business enterprise but also the hierarchical institution” (Lessem, 1990, p. 85).

Whipp refers to learning as how people within firms collectively change their knowledge, values and shared mental models of their company and its markets (Whipp, 1991). The challenge is to design reward and recognition mechanisms that promote, support and reinforce decisions and actions related to individual, team and organizational development.

One of the limitations of common reward and recognition tools is that they rarely cause people to change their values or beliefs about the many aspects of their work life, although they can encourage people to adopt and maintain behaviours, comfortably or not, that elicit approval from managers. Complex pay systems do not have the capability to fulfil the basic human need to be appreciated and feel valued, and performance appraisal systems are typically expected to make up for the absence of regular, clear and honest communication about daily decisions and actions. If a situation is already intrinsically rewarding, adding an extrinsic reward provides very little, if any, added benefit.

MDS SCIEX has an evolving compensation program that has changed as the size and needs of the business have changed. The company recently launched a new
compensation framework designed to foster an attitude of ownership among its employees. The program is progressive on several fronts; it provides a clear link between organizational goals and rewards, contains a component of individual performance, and employs a communication strategy that reveals all facets of the program. Now that the framework is in place, MDS SCIEX can turn its attention to formally setting expectations for learning activities and the application of learning to the job and defining the measurement criteria. In this way, MDS SCIEX can meet two objectives: convert the costs of training into a contribution to the bottom line, and maximize personal, team and organization productivity. The literature is clear on the need for clear developmental expectations. McCall (1998) refers to the use of learning goals as an extension to organizational growth, provided that individuals are held accountable for their performance in relation to these goals. Managers at MDS SCIEX believe that learning is critical to the business, but admit that it holds a lower priority when compared to other "hard" business objectives. Technical training occurs as needed and is seen to have a clear relationship to the business goals. Non-technical training and its resulting behavioural changes, while understood to be important on an intellectual level, has not achieved a high priority ranking with many managers. It is difficult to justify releasing employees for training activities, or reorganizing job responsibilities every time someone leaves the team to participate in learning experiences, when a manager is trying to meet product release dates. If the value of non-technical training is not seen to be critical to success, even by a few managers, the cost for the company may be felt in the long-term, when the need to be responsive to change in innovative ways will be limited or slower than needed.
One of the greatest challenges for any enterprise is to manage the changes demanded by survival and growth. These changes require employees to learn, share learning and do things differently from the way they did them before. People are reluctant to take risks, either because of their personal attitudes toward risk, or because they have witnessed the negative consequences of failure in their organizations. Since a key aspect of learning is the testing of new ideas, we can evaluate reward systems, in part, on the basis of how they respond to experimentation and mistakes.

The survey results provide an interesting perspective on the perceived attitude of MDS SCIEX toward mistakes and risk. Item 2 (mistakes turned into constructive learning experiences) of the survey captures the company's reaction to mistakes. Responses to this item were rated moderately true by most participants. Item 6 (mistakes are viewed as opportunities) scored low, with the most common rating of 2 for Scientists (36%), Management (40%) and Administrative/Corporate (41%) groups. In the focus groups, managers and employees discussed ways to turn mistakes into constructive learning experiences. Employees suggested that managers be trained on how to promote risk taking, as well as how to provide helpful feedback on problems and mistakes. Managers felt that preparing and implementing alternative plans for cases of extreme risk would help to minimize the impact of potential mistakes. Corrective action would be a collaborative effort between the employee and manager. Managers believed that it is important to communicate the importance of taking risks and reassure employees that they would not be punished for their mistakes. Given the financial success of the organization, a success based almost exclusively on creativity and innovation in all
functions, it is interesting to ponder the potential for even greater success if more effort was made to actively turn mistakes into learning experiences. Perhaps there is a lack of congruency between espoused beliefs related to risk, and the management of the performances of employees who make mistakes. Clear direction and expectations of appropriate risks may be needed to set the parameters for managers and employees. New non-monetary recognition systems may send supportive signals about the value of innovation in the organization.

Item 5 (experimentation encouraged as a way of doing business) responses appear to contradict the findings in Item 2 (77% of the total group scoring 3 or higher), but this may reflect a discrepancy between what is communicated and what is practiced. Employees and managers alike believe that the company values experimentation, although some would suggest that this is seen to be the purview of the research group. This perception makes sense given that the role of the research group is to hypothesize and test theories which may, or may not, contribute to the business. The expectations about experimentation and responses to errors should be clarified and communicated consistently through discussions between managers and employees, and in the setting and monitoring of annual performance objectives. The potential of the performance management system to engage people in the practice of new skills and behaviours cannot be underestimated. In this situation, performance management is seen as the continuous coaching, support and feedback that the manager provides the employees. Skilled managers can create a safe environment for experimentation that will, in time, set the
standard across the organization. Managers at MDS SCIEX have made progress in honing their coaching and feedback skills. A few managers are exemplary in this area.

Reward and recognition systems must measure what is critical to the business and ensure that the measurement criteria are aligned with the stated goals of the organization. The challenge becomes setting performance targets aimed at capturing and rewarding instances of learning and risk, providing mistakes yield new knowledge and insights that can be applied in the next attempt. It is wise to establish incentives that are flexible enough to reward progress, thereby giving attention to the process as well as to the outcomes. Kouzes and Posner (1995) state that encouragement is the key incentive for learning that is best supported by a process of regular feedback.

Not all successes provide developmental opportunities. This is confirmed by the comments in the focus group discussions. Employees believe that the current performance appraisal system is a deterrent to experimentation; it is felt that managers tend to remember only the mistakes and will revisit them at appraisal time. While their beliefs are substantiated by real past and current examples, management in general has been labelled negatively based on the actions of a few managers. Managers approached this issue with several positive suggestions including promoting risk taking by turning mistakes into learning opportunities, sharing learning experiences with others, and by clearly and frequently communicating that managers will be supportive of employees who are willing to experiment. MDS SCIEX may be best served with more emphasis on learning and growth in the appraisal process. Perhaps distance between a retrospective
on past performance and planning for future development would help accomplish this. It would be useful for the senior management team to explore why such good ideas are not being incorporated into the performance management systems. As stated earlier, and not to be used as an excuse, the lack of resources and time may direct the managers’ attention elsewhere.

In a competitive, high technology industry, it doesn’t make sense to take refuge in conformity and security. Taking meaningful, reasonable and moderate risks is becoming a prerequisite of survival (Kline & Saunders, 1998). In Item 1 (people feel free to speak their minds) of the survey, a key element of learning received an overall mid-range response, with Scientist and Engineer/Designer groups agreeing most strongly (75% and 62% chose scores of 4 or 5). This is an encouraging finding, given the destructive effect of fear on innovation, but leaves plenty of room for improvement. MDS SCIEX appears to be on the right path in this regard and building an open and safe environment can only help the business goals.

Overall response to Item 7 (willingness to break old patterns and try new ways of managing) was moderate, with 90% of scores falling in ratings 2, 3, and 4. Reaction to Item 8 (management takes risks) leaned somewhat to the lower scores. Scientists rate this statement lowest (55% scored 2 or 1) with Technicians and Engineer/Designers not far behind. Again, setting clear performance expectation with measurement and accountabilities will generate greater gains in this area.
For both these items, the management group spread their scores around the “moderate” agreement score. In order to encourage risk-taking and innovative thinking in staff, leaders must adopt a bold and enterprising attitude toward knowing, learning and confronting problems. Over time, practice in risk-taking fosters better risk analysis and judgment improves (Kline & Saunders, 1998). Managers at MDS SCIEX need to take the lead and model the desired behaviours. Only after observing the impact of success and failure will others decide if it is safe to follow suit. Perhaps the issue is more one of celebration and recognition of those managers, and employees, who do take successful and unsuccessful risks.

The survey results suggest that managers must exercise more openness and flexibility in incorporating new information into existing structures and systems. They must be convinced that by defining and restructuring a system’s operating rules, they can continuously improve the system itself (Kline & Saunders, 1998, p. 244). Managers must come to believe that the path to meeting the business goals lies in the development of themselves and their employees. Learning organizations ensure that individual and team learning contribute to systems-level organizational learning and that organizational learning leads to productive action (Gephart, 1996, p. 38). In the focus groups, employees felt that the main focus is on meeting project and production targets, rather than on employee development. It is interesting to note that this is seen as two separate activities, rather than viewing development and learning as the vehicles for accomplishing the technical and business objectives. In this regard, MDS SCIEX practices do not follow the recommendations described in the literature, and over time,
may have a negative effect on the business. Perhaps tying talent development to the business strategies in a tangible manner, would encourage managers to use the development of employee skills and knowledge as the vehicle for achieving the technical business objectives.

Managers and employees recommended that the impact of training be measured and that managers be held accountable for staff development. Managers proposed a number of incentives for learning, including integrating employee development into their own objectives. Managers should be held accountable by the senior management team for developing talent. They requested that the senior management team communicate and support the importance of learning. Allowing all employees access to a career development specialist and/or training a group within the company to act as career coaches would assist the managers in this area. This last comment suggests that MDS SCIEX managers are looking for relief from the role of career coaches. They may view the administrative burden as an added workload stress. In order to relate the career goals and learning objectives to the job, employees must see their managers as the primary contact for discussions about growth. This does not preclude the use of support staff in assessments and sourcing learning resources.

Interesting comments were noted from the focus groups when discussing methods to encourage all staff to improve their skills. The responses from employees reflect a desire to have more control over their own choice of training. Employees also requested that technical skills training be emphasized more. Managers recommended rewarding
staff by such things as free lunches, cash to be spent on courses, and awarding
development credits to be used in determining promotions, compensation and
performance appraisal ratings. Candidates for employment at MDS SCIEX should be
screened for an aptitude and interest in continuous learning. Current employees need
more education about the long-term value of learning with respect to career development.

Other suggestions included making learning fun, offering a variety of courses and
customizing courses for job specific, just-in-time training. These manager responses
suggest an underdeveloped understanding of their role in identifying, encouraging and
supporting the growth aspirations of their employees. Again, clear role definition and
expectations may assist managers in understanding their responsibility to their employees
and the organization.

Rewards and recognition either serve as motivators or, most often, as de-

motivators. This stems from a number of factors: the lack of clarity about what
performance objectives should be and how they can be designed to leverage learning
opportunities; a lack of congruence between what the compensation systems are
supposed to reward and what they actually do reward; a continued focus on short-term
results leaving little room for mistakes, risk and collaboration, and a low priority placed
on the intangible rewards that often have more impact than the financial rewards.

We cannot always predict what will give rise to a learning opportunity, and in the
true spirit of the learning organization model, managers and employees need to look for
learning in the natural course of managing the business. If organizations like MDS
SCIEX hope to send strong and clear messages about the importance of learning to their employees, they need congruency between their espoused beliefs and their practices as they relate to compensation, non-monetary rewards, performance management and the level of coaching skills in their managers.

Imagine the power of the message if there is to be no reward for learning activities such as attendance at courses, but significant rewards for applying and sharing new skills and knowledge. Rewards for knowledge use are usually intangible and are reflected in the enhanced roles and challenges provided to the learners. This is an area ripe for cultivation, and MDS SCIEX could benefit from more tools to help managers and learners integrate and apply new knowledge.

Transfer of Skills, Evaluation and Learning

A review of the literature revealed an abundance of information related to the measurement of training impact on individuals and on the business. Very little could be found on the role of program evaluation in the learning organization. As seen in the previous section on Rewards and Recognition, the literature does provide a number of references to the evaluation of performance as accomplished through the measurement of learning goals. This applies more to the transfer of skills than to determining the impact on the financial results of the business.

The discussion of skill transfer and program evaluation is best started with a view of how, or if, individuals apply new skills to their jobs. Many of the issues discussed in
the previous section on Rewards and Recognition have an impact on the effective transfer of learning from the developmental activity to the job. The attitude of a manager towards mistakes and risks has a powerful influence on the employee's decision to apply new skills or behaviours on the job. This is especially true when the learning event focused on non-technical skills. If employees believe that mistakes will become constructive learning experiences, they will more willingly expose their vulnerabilities as they practice new approaches. However, if experimentation is viewed positively only when the outcome is successful, employees will not take the chance of publicly failing in the use of new skills.

MDS SCIEX has room for improvement in fostering a strong and appropriate risk orientation. When asked about the transfer of skills to the job, the consensus from employees was that the trainee should share the new knowledge with his or her group and manager so that the value of the training is put into practice in the department. A monitoring system should be in place whereby the manager observes how the training is being applied and the employee advises the manager, possibly at the performance review, how well the new skills have been applied. Not all employees agreed and some felt that they should not be held accountable for applying the training. Managers believed that trainees should be held accountable for applying the newly acquired skills and they suggest this can be facilitated by encouraging the employee to share the information with the work group and by providing project opportunities to the employee to practice the new skills. These responses are encouraging, in that both employees and managers believe that new skills need to be brought back to the job. Both respondent groups also
see the manager as the champion of this process. MDS SCIEX could capture this willingness to apply new skills by helping employees understand their roles in the transfer of skills, thereby establishing a partnership with their managers; by giving managers more tools and support and by ensuring that the organizational design is flexible enough to accommodate on-the-job growth opportunities.

Both groups touched on the need for evaluation and monitoring as a tool to ease the application of skills to the job. If we believe that the manager has the primary responsibility for capturing his or her employees' new skills and knowledge, then we must turn our attention to the climate that exists in any given work group. Any resistance on the part of the manager will lead to the employee setting aside this new knowledge.

MDS SCIEX, like all organizations, has a mix of different managerial responses to learning and thus to the transfer of learning. While not explicit, the focus group findings suggest that more attention on the part of the manager is needed if transfer is to occur in an enduring manner. Managers had a number of ideas about how that could be accomplished, but as discussed earlier, other priorities stand in the way of making this a reality. In response to a question about whether or not new skills are applied on the job, both groups indicated that learning is sometimes applied to the job, but there is little follow-up. Managers had similar responses to this question, suggesting that there is little assessment of the impact of the training. Interestingly, their comments addressed the formal aspect of evaluation, suggesting that many managers still see the responsibility for monitoring and evaluation as being with the training team. Perhaps a discussion is
required on the needs and depth of program evaluations as a tool of change. Also of value would be a definition of development and the roles and responsibilities of all contributing parties. A review of the performance management system may provide opportunities to build the application of new skills in a natural manner.

Mechanisms that encourage employees to share new knowledge accomplish two objectives, first they reinforce the learning experience for the learner and secondly, they spread knowledge across a larger group. Scoring for Item 10 (sharing of learning with peers and organization) was predominantly moderate, leaving lots of room for improvement.

In many organizations, expertise is held locally: in a particularly skilled computer technician, perhaps, a savvy global brand manager, or a division head with a track record of successful joint ventures. Those in daily contact with these experts benefit enormously from their skills, but their field of influence is relatively narrow. Transferring them to different parts of the organization helps share the wealth. (Garvin, 1993, p. 87)

The distribution for Item 13 (awareness beyond function/specialty) scores is bell shaped, but leaning toward the lower scores. Most of the scores (73%) showed respondents agreeing only to a slight or moderate extent, similarly distributed across job groups. Too much work specialization means people doing jobs for which they will not see the end results, a factor found to inhibit organizational learning. The results also suggest that groups may be sharing information within their work units, but are less likely to do so across work units. Opportunities for cross-fertilization of ideas and solutions could be structured into work processes to reduce perceived distance among the functions.
and increase understanding and appreciation. At present, the MDS SCIEX reward systems do not directly reward this type of information sharing.

Attitudes toward team learning appear to be somewhat problematic as well. In Item 14 ("lessons learned" sessions produce clear and permanent system changes), the Scientist and Administrative/Corporate groups are particularly dissatisfied with "lessons learned" sessions. These results suggest that managers can benefit from improved strategies for managing knowledge gained from experience in functional and cross-functional teams. In a learning organization, emphasis is placed on creating, capturing, and moving knowledge rapidly and easily so that the people who need it can access and use it quickly (Gephart et al, 1996). Companies must review their successes and failures, assess them systematically, and record the lessons in a form that employees find open and accessible (Garvin, 1993). MDS SCIEX currently employs the "lessons learned" technique, often called "post-mortems", in evaluating the outcomes of major product development projects. Perhaps this experience can be applied more widely in the context of evaluating learning programs.

Despite the obvious wisdom of evaluation, organizations rarely undertake measuring the impact of their development initiatives in any depth. This level of analysis is traditionally not required or expected by senior management. Over the past five years, there has been a growing interest in evaluation of training as a key element of business, particularly as the cost of providing training is escalating. Executives must now show a return-on-investment for their training dollars. Unfortunately, a thorough evaluation
requires expertise, is time consuming and can be expensive. Line managers rarely have the resources or the interest for the undertaking. Even the experts in the field acknowledge the difficulty in measuring the impact of learning.

The return on investment for short term training programs is easier to capture with the ROI process. It is more difficult to attain the ROI in educational programs because of the extended time for payback and because other intervening variables may enter the process. Developmental programs are the most difficult for ROI application because of the long-term focus and the full range of variables that may enter the process and complicate the linkage with the performance change. (Phillips, 1997, p.11)

Like most organizations, MDS SCIEX has approached evaluation with a focus on capturing three levels of results: the reaction evaluation which captures the level of satisfaction on the part of the trainees; the learning evaluation which measures the extent to which participants change attitudes, improve knowledge, and/or increase skill as a result of attending the program; and the behaviour evaluation which determines the degree of changes in behaviour resulting from a training program. Recently, MDS SCIEX elected to conduct an in-depth, return-on-investment evaluation of a major company-wide innovation initiative. While the results were extremely positive and were helpful in determining the financial impact, the organization acknowledged that it would likely only repeat this type of evaluation for significant initiatives. Having said that, the act of evaluation did bring about a heightened interest and focus on the application of new skills. This may be a sufficient outcome from an evaluation exercise.

Ultimately, it is more important for MDS SCIEX to develop and enhance tools and management skills related to the transfer of knowledge. Any improvements in this area will accomplish three objectives: placing a much needed emphasis on capturing and
moving knowledge rapidly; grooming managers to be effective coaches; and providing employees opportunities to grow and design their work in a way that combines their need for challenge and the organization’s need for innovative thinking.

Conclusions

The key objective of this research was to determine if the experience of MDS SCIEX in adopting the key concepts of the learning organization would mirror the predictions of the models in the current literature. Overall, the models were found to be accurate predictors of the practical challenges this organization faced, and continues to face, as it tries to incorporate new values and practices related to individual and organizational development.

The one element that is not clearly addressed in the literature, and which may be unique to the high-technology industry, is the speed at which events unfold. The nature of the business necessitates rapid changes in tools and processes to maintain a leadership position in the market place. This approach naturally carries through to the other processes and systems in the organization, including training and development. This has three potential effects: first, it is very difficult to isolate the impact of learning and development activities within the larger context of change in all areas of the organization; secondly, in the interest of resolving issues and making progress, new initiatives are not always given enough reflection at the onset, nor are they nurtured through their growing pains; and last, the success of development seems to lie with a handful of champions who may not be able, or available, to promote these programs. A further consequence of
speed is neglecting to adjust other process or programs that could become obstacles to success.

Suggestions to other organizations embarking on similar journeys are to:

- frame the developmental objectives as part of the strategic plan, with clear and measurable outcomes, and ensure understanding through frequent and varied communication tools;

- review connecting systems to minimize obstacles, with particular focus on new employees orientation, performance management and monetary and non-monetary incentives:

- shift ownership of talent development from the original champion and architect to every manager and employee, and support this through clear roles and expectations, access to tools and resources, and ties to performance objectives and rewards.
Recommendations for Practice

MDS SCIEX is well positioned to move to the next level of organizational growth related to learning and development. This research defined a number of attributes within the MDS SCIEX culture that are now promoters of learning and development. They include the following:

1. All employees believe that it is always possible to find a better way of doing things. This view has been confirmed by the results of other surveys. The challenging work, high level of professionalism and incredible level of commitment all contribute to the desire to continuously improve the technical and process elements of the work.

2. The freedom to speak freely and challenge is well developed in the areas of research and engineering. This is critical given the technical aspects of the products and services and the need to stay ahead of the competition with innovative designs.

3. There is an overall positive attitude to continuous improvement that is related to item 1 above. There is a high degree of pride across all levels of the organization that is a great motivator for improvement.

4. Employees believe that learning is expected and encouraged at all levels of the
organization. This belief is critical for the success of change initiatives.

5. Survey and focus group responses clearly indicated that people want to improve their competencies. This desire is related to the employees’ needs to maintain currency in their fields and to the focus on global competition that demands the use of the best techniques and methods.

The valuable input from managers and employees identified a number of areas requiring attention. The theme of the suggestions concentrates on what is needed to support a culture that seeks out learning, applies new skills and knowledge to the job and, by doing so, provides opportunities for employees to have challenging roles and to craft career paths that contribute to their personal aspirations.

1. Business Vision

Making the organizational vision more accessible would allow employees to make a connection between the organizational growth objectives and their responsibilities. It would also provide a context for the selection of developmental opportunities.

2. Experimentation

A key opportunity will be to increase the level of comfort with challenging the status quo and taking appropriate risks. This can be accomplished by open dialogue about the organizational standards and by providing examples of a safe environment for experimentation. This is critical in setting the perception of how mistakes are treated.
3. Development Process

It appears that there is a general dissatisfaction with the performance appraisal process. Upon closer examination, it is not the process or the tools that seem objectionable, but rather the lack of process related to the identification, selection and monitoring of development plans. Monetary rewards and non-monetary recognition programs would give visible support to the value of learning to the organization.

4. Coaching

The coaching skill of many managers is not at the level required to guide the growth of their employees. Improvements in this area would reap significant benefits to the organization. A more receptive attitude toward learning, including more creative job design, cross-functional transfers, the use of peers as learning resources, and internal career counseling support would all contribute to integrating learning into the work processes.

Recommendation for Further Research

A final goal was to identify opportunities for further research related to the development of a practical learning framework for organizations with a specific focus on the systems that would support the ease of transformation. Although there has been some research on rewards and recognition and learning, there is limited research on compensation design options for organizations looking to reinforce their commitment to learning and risk through their compensation practices. The outcomes of this study suggest that a deeper understanding of a variety of compensation models and their impact
on talent development would be useful.

Similarly, the literature in program evaluation is limited to the mechanics of capturing the impact of training. Additional work on the role of evaluation in strengthening a learning culture would provide organizations with a menu of models and tools to support their change initiatives.
References:


APPENDIX A

LEARNING SURVEY QUESTIONS (sent as e-mail to all employees)

ON BECOMING A LEARNING ORGANIZATION

"The ability to learn faster than your competitors may be the only sustainable competitive advantage." Royal Dutch/Shell

MDS SCIEX is continuing on a journey toward becoming a learning organization where people continually expand their capacity to create the results they truly desire, where new ways of thinking are encouraged, where collective inspiration is set free, and where people are continually learning how to learn together.

The objective of sharing new skills and knowledge is to increase our competitive advantage while contributing to the growth and development of all employees. Please tell us what we currently do well and where we need to improve to meet this challenge.

YOUR INPUT IS CRUCIAL AND CONFIDENTIAL. The survey software removes your e-mail name from the reply so that your reply will be anonymous. Please take 20 minutes out of your busy schedule to complete the attached questionnaire.

If you do not have email and you were supplied with a paper copy of this survey, please mark your responses directly on these sheets. Drop off the completed survey in the box provided in the HR area marked "MDS SCIEX Learning". Your responses will be added to the rest of the company's.

Thank you for your time and input.

Suzanne Wolfe

HOW TO ANSWER:

To respond to this survey, click on the "REPLY TO SENDER" icon to create an e-mail message that contains the survey.

Make sure the reply contains the survey authentication marker.

To answer a question, type an x between the brackets, like this: [ x ].

For fill-in-the-blanks, type between the brackets like this: [ your response ].

Please make no other changes to this survey. Your survey will not be included electronically if you differ from these instructions.

For each question you may select one of the possible responses:

[ ] a) not at all
[ ] b) to a slight extent
[ ] c) to a moderate extent
[ ] d) to a great extent
[ ] e) to a very great extent
ABOUT YOU:

A. Your functional area:

Choose one:

- [ ] a) Manufacturing
- [ ] b) Product Development
- [ ] c) Research
- [ ] d) Other

B. Your job group:

Choose one:

- [ ] a) Scientist
- [ ] b) Engineer/Technical Specialist/Designer
- [ ] c) Technician
- [ ] d) Manager (or more senior)
- [ ] e) Administrative/Corporate/Other

1. People feel free to speak their minds about what they have learned without fear, threat or repercussion for disagreeing.

2. Mistakes made by individuals, teams or departments are turned into constructive learning experiences.

3. There is a general feeling that it is always possible to find a better way to do something.

4. Multiple viewpoints and open productive debates are encouraged and cultivated.

5. Experimentation is endorsed and championed and is a way of doing business.

6. Mistakes are clearly viewed as positive growth opportunities throughout the system.

7. There is a willingness to break old patterns in order to experiment with different ways of organizing and managing daily work.

8. Management practices are innovative, creative and periodically risk-taking.

9. The quality of work life in our organization is improving.

10. There are formal and informal methods designed to encourage people to share what they learn with their peers and the rest of the organization.
11. The organization is perceived to be designed for problem-solving learning.  
12. Learning is expected and encouraged across all levels of the organization: management, research, product development, manufacturing, and administration.  

13. People have an overview of the organization beyond their specialty and function and adapt their working patterns to it.  

14. "Lessons learned" sessions are conducted to produce clear and permanent changes to system and practices.  

15. Management practices, operations, policies and practices that become obsolete and hinder the continued growth of people are removed or replaced.  

16. Continuous improvement is expected and treated receptively.  

17. There are clear and specific expectations of each employee to receive a specified number of hours of learning and education annually.  

18. People at all levels are specifically directed towards relevant and valuable learning opportunities inside and outside the organization.  

19. Cross-functional learning opportunities are expected and organized on a regular basis, so that people understand the functions of others in different jobs of related importance.  

20. Middle managers are seen as having a primary role in keeping the learning process running smoothly throughout the organization.  

21. The unexpected is viewed as an opportunity for learning.  

22. People look forward to improving their own competencies as well as those of the whole organization.  

23. The systems, structures, policies and practices of the organization are designed to be adaptive, flexible and responsive to internal and external influences.  

24. Presently, even if the environment is complicated, chaotic and active, we are not on overload.
25. There is a healthy, manageable level of stress that assists in promoting learning.

26. Continuous improvement is practised as well as preached.

27. The difference between training/education and learning is clearly understood. (Training and education can be so conducted that no learning takes place.)

28. People are encouraged and provided with the resources to become self-directed learners.

29. There is a formal, on-going education program to prepare middle managers in their new roles as facilitators, coaches and leaders.

30. Recognition of your own learning style and those of co-workers is used to improve communication and over-all organizational learning.

31. Management is sensitive to learning and development differences in their employees, realizing that people learn and improve their situations in different ways.

32. There is sufficient time scheduled into people's calendars to step back from day-to-day operations and reflect on what is happening in the organization.

33. There is direction set, and resources allocated to bring about meaningful and lasting learning.

34. Teams are recognized and rewarded for their innovative and paradigm breaking solutions to problems.

35. Managers have considerable skills for gathering information and developing their abilities to cope with demanding and changing management situations.

36. Managers enable their staffs to become self-developers, and learn how to improve their performances.

This questionnaire was extracted from the Ten Steps to a Learning Organization, 2nd ed., Kline, P. and Saunders, B., Great Ocean Publishers, Arlington VA, pp. 61-63.

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APPENDIX B

MDS SCIEX

CASE STUDY: HIGH TECHNOLOGY CULTURE & LEARNING

Administrative Consent

MDS SCIEX has made tremendous progress in creating a culture that values learning as a competitive advantage. We wish to continue our learning of the impact of our programs and processes as they relate to learning. In order to increase our understanding, we will be conducting a study of the impact of learning at MDS SCIEX. The resulting information will also help increase our effectiveness.

A 36-question survey on the components of the MDS SCIEX culture related to learning will be sent to the general employee population. Responses will be anonymous to preserve confidentiality. In addition to the survey, two focus groups will be conducted to expand on the themes uncovered in the analysis of the survey results. Recognizing the possibility of different viewpoints between managers and non-management staff, a focus group will be conducted for each group. All data will remain strictly confidential. Names will not be attached to any comments, although MDS SCIEX will be identified by name as the research site. In order to increase the level of comfort, a third party (Karima West) will be facilitating the focus groups. She will transcribe the notes without identification.

All data from this study will be:
- maintained in a secured area inaccessible to anyone except the facilitator until the end of the study when it will be destroyed
- compiled into collective reports containing no individual information
- reported to management as part of a larger study on learning at MDS SCIEX
- used in my research on learning at MDS SCIEX for my master’s thesis
- made available to all interested employees in the form of my completed master’s thesis

The organization and individuals are free to decline to participate without consequence or to withdraw from the study at anytime. Upon withdrawal, any information provided will be destroyed and not used in the study. Precautions have been taken to ensure that confidentiality is maintained and to protect participants from possible evaluation on the basis of the written report.

The final products of this project will be a report to management, journal articles as well as a thesis to which you will have access. Thank you in advance for your cooperation. Please do not hesitate to contact me with questions or concerns.

Suzanne Wolfe
wolfem@sciex.com

CONSENT:

I have read the above letter and consent to provide the data requested. I understand that the data for this study will be kept confidential. I give my consent that the data collected may be pooled into collective reports to determine the impact of learning at MDS SCIEX and to assist in future learning initiatives.

[Signature]

Andy Boorn, President, MDS SCIEX

8/9/00 Date
INVITATION TO PARTICIPATE IN FOCUS GROUPS (sent as e-mail to all employees)

About 6 months ago we sent out an electronic survey on culture and learning. The survey results identified a number of interesting points for further study.

We would like to increase our understanding of these findings by hosting two focus groups meetings: one for managers and one for non-management staff. Each focus group would have 10 participants and last a maximum of 90 minutes over lunch supplied by Human Resources.

We will randomly select 20 participants from all those who indicate an interest in participating in the project.

If you are free for lunch and conversation on the following dates, and interested in participating, please contact Wendy Murphy as soon as possible. She will advise you shortly if you have been randomly selected.

Focus Group for Non-management June 17th 12 to 1:30
Focus Group for Managers June 24th 12 to 1:30

Location to be finalized.

Thank you for your help.

Suzanne Wolfe
Human Being
MDS SCIEX
71 Four Valley Drive
Concord, Ontario L4K 4V8
905-660-9006 ext. 212 - fax: 905-761-3548 - wolfese@sciex.com
APPENDIX D

MDS SCIEX
CASE STUDY: HIGH TECHNOLOGY CULTURE & LEARNING
Focus Group Consent Form

MDS SCIEX has made tremendous progress in creating a culture that values learning as a competitive advantage. We wish to continue our learning of the impact of our programs and processes as they relate to learning. In order to increase our understanding, we will be conducting a study of the impact of learning at MDS SCIEX. The resulting information will also help increase our effectiveness.

Recognizing the possibility of different viewpoints between managers and non-management staff, two focus groups will be conducted one for each group. Your participation will involve spending up to 90 minutes in one focus group.

All data will remain strictly confidential. Your name will not be attached to any comments. In order to increase your level of comfort, a third party (Karima West) will be facilitating the focus groups. She will transcribe the notes without identification. The data will be:

- maintained in a secured area inaccessible to anyone except the facilitator until the end of the study when it will be destroyed
- compiled into collective reports containing no individual information
- reported to management as part of a larger study on learning at MDS SCIEX
- used in my research on learning at MDS SCIEX for my master's thesis
- made available to all interested employees in the form of my completed master's thesis

You are free to decline to participate without consequence or to withdraw from the study at any time. If you withdraw, you may request that any information that you have provided be destroyed and not used in the study. Precautions have been taken to ensure that confidentiality is maintained and to protect participants from possible evaluation on the basis of the written report.

The final product of this project will be a report to management, journal articles as well as a thesis to which you will have access.

Thank you in advance for your cooperation. Please do not hesitate to contact me with questions or concerns.

Suzanne Wolfe
wolfesn@sciex.com

CONSENT:

I have read the above letter and consent to provide the data requested. I understand that my responses will be kept confidential. I give my consent that the data I provide may be pooled into collective reports to determine the impact of learning at MDS SCIEX and to assist in future learning initiatives.

_____________________________  ______________________________  ________________
Signature                        Name (please print)                  Date
FOCUS GROUP QUESTIONS

Leadership and Learning

1. Do managers have the skills to manage their employees' development? What is the gap today?
2. What percentage of employees' development is guided/supported by the manager?
3. What are some ways managers could help their staff develop?
4. What are some systems and policies that could be made more flexible to encourage learning? How?
5. What are some ways that knowledge could be better distributed within the organization?
6. Are there barriers to learning at MDS SCIEX?
7. What are some ways that differences could be better valued across the organization?
8. How could MDS SCIEX incorporate appreciation of different styles into the current training practices?
9. Why do you think the self-directed learning options in the learning calendar have not been used?
10. How would you rate the importance of learning in non-technical areas?
11. To what extent do you think formal or informal learning is important to the company's financial success?
12. Would you feel comfortable discussing your development needs with your manager?

Rewards & Recognition and Learning

1. Are there penalties for mistakes in the non-technical aspects of your job?
2. How can MDS SCIEX encourage experimentation and risk-taking?
3. What are some ways that mistakes can be turned into constructive learning experiences?
4. How can managers be encouraged to value learning for themselves and for their employees?
5. What are some ways MDS SCIEX could encourage all staff to improve their competencies?

Transfer of Skills, Evaluation and Learning

1. Do new skills and knowledge get applied on the job? Why?
2. What actions should managers take to help employees use their skills on the job?
3. What are some reasons employees complete or don't complete surveys related to learning or culture?
4. What expectations do you have about the use of survey results related to learning activities at MDS SCIEX?
APPENDIX F

Respondent Booklet for

EMPLOYEE OPINION SURVEY

by Louis Tagliaferri, Ph. D.

GP-901
**EMPLOYEE OPINION SURVEY**

**INSTRUCTIONS:** Read each of the statements in this questionnaire carefully. Decide the extent to which you agree with each statement as it applies to conditions in this organization. Then, to the right of each statement, check (✓) the box that most accurately expresses your opinion or feelings. A section in which you can make additional comments will be found on the back of this questionnaire.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Somewhat Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Disagree</th>
<th>Strongly Disagree</th>
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</thead>
<tbody>
<tr>
<td>01. Communication from management is frank and honest.</td>
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<td>02. Employees are free to speak up and say what they think.</td>
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<td>03. I get all of the information that I need to do my job properly.</td>
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<td>04. My supervisor is an accurate, reliable source of information.</td>
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<td>05. There is a lot of teamwork between management and the employees.</td>
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<td>06. Members of management work together effectively as a team.</td>
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<td>07. There is a lot of teamwork among the employees in my work group.</td>
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<td>08. A major focus in this organization is on work team development.</td>
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<td>09. Management conducts the business of this organization effectively.</td>
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<td>10. Management is responsive to employees' needs and concerns.</td>
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<td>11. Management has been successful developing a productive work force.</td>
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<td>12. Most of the individual managers are effective in their jobs.</td>
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<td>13. Quality standards have been established for all of our products/services.</td>
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<td>14. Management is fully committed to achieving total quality performance.</td>
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<td>15. Our finished products/services fully meet our customers' requirements.</td>
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<td>16. We are continuously seeking ways to improve our products and services.</td>
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<td>17. I am paid fairly compared with the pay that I could get elsewhere for similar work.</td>
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</tbody>
</table>
18. I am paid fairly compared with the pay that others in this organization get for doing similar work.

19. I have a good understanding about the employee benefit plan.

20. The employee benefit plan meets my needs.

21. I understand what the performance standards are for my job.

22. I understand how well I am meeting the performance standards for my job.

23. Employees are usually recognized for good work performance.

24. The job environment motivates me to perform at my very best.

25. Management wants to know about my ideas and suggestions.

26. Management encourages employees to be innovative and creative.

27. I am involved in making decisions that effect my work.

28. I have reasonable opportunities to try my own ideas on the job.

29. I understand the policies, procedures and work rules of this organization.

30. Policies, procedures and work rules are administered fairly.

31. I understand the goals and objectives of this organization.

32. Most employees are committed to achieve organizational goals.

33. My supervisor is an effective problem solver.

34. My supervisor is an effective coach and trainer.

35. My supervisor is willing to listen to my problems or complaints.

36. My supervisor treats all employees fairly and uniformly.

37. My job is interesting.

38. My job makes good use of my skills and abilities.

39. There are good opportunities to learn new skills in this organization.
40. Qualified employees are given fair consideration for advancement.

Strongly Agree
Somewhat Agree
Neither Agree nor Disagree
Somewhat Disagree
Strongly Disagree

41. I am confident about management's assurances that my responses to this survey are anonymous and confidential.

42. This survey has been a good way for me to candidly express my opinions, concerns and suggestions.

43. The issues in this survey are important to me.

44. This survey demonstrates that management is sincerely interested in learning about employees opinions, concerns and suggestions.

45. I believe that management will use the results of this survey constructively.

46. I have received all of the training that I need to do my job properly.

47. New employees are given the training that they need to do their jobs properly.

48. Employees are provided with continuous education and training to develop their job skills.

49. The employees in our work group have received training in ways to improve their effectiveness as a team.

50. Employees are provided with continuous education and training about the operations of this organization and its products and services.

51. The Quarterly Employee Assemblies meet my needs.

COMMENTS & SUGGESTIONS
Please use the space below and/or additional paper to make suggestions to improve the content and the format of the Quarterly Employee Assembly meetings or any other comments or suggestions that you might have to improve the work environment in this organization.
Before you get started:

SCIEX's Senior Management Team would like to thank you for taking the time to complete the SCIEX Barometer. Your opinions about your job, your ability to use your skills, management practices and the climate within SCIEX are extremely important. The results will allow us to measure the changes made over the past two years in building a positive environment and will identify areas for us to focus on over the next few years. Your honest opinions are needed.

Each employee will receive the SCIEX Barometer. It should take approximately 20 minutes to complete. To ensure the confidentiality of your responses, the results will be analyzed and reported by an external consultant.

A summary of findings will be distributed at the end of August to all employees and will be reviewed at an assembly in September. Each member of the Senior Management Team will also be discussing his or her functional results with employees in his or her departments.

All of the information in the Barometer will be collected anonymously and kept confidential. You are not required to give your name and it will not be possible for us to identify how you are.

Please complete the Barometer no later than July 5, 1996, seal it in the envelope provided, and deposit it in the special box located in the Atrium.

If you've changed jobs within the last three months, please complete the questions based on your previous position. New SCIEX employees should complete the survey as best they can.

In the Barometer, we talk about five different employee groups: employees, manager, work team, management and the senior management team. Please keep these definitions in mind when answering the questions.

"EMPLOYEE": Everyone who works at SCIEX on a permanent or contract basis

"MANAGER": The person who conducted your performance appraisal.

"WORK TEAM": Your manager and all the people who report to him or her. All managers, please note: your work team consists of your direct manager (Director or Vice President) and all your colleagues who also report to that person.

"MANAGEMENT": All Managers (as defined above), including Managers, Directors, Vice-Presidents, and the President.

"SENIOR MANAGEMENT": Members of the Senior Management Team (Directors, Vice-Presidents and the President)
Please read each of the statements carefully. For each statement, tell us if you strongly agree, strongly disagree, or somewhere in between. If you feel that you have no way to comment on the statement, please use the unknown/unsure box. Check only one box per question. It’s important to answer each question. Please keep the definitions on page 1 in mind when answering the questions.

<table>
<thead>
<tr>
<th>#</th>
<th>QUESTIONS</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
<th>Unknown/Unsure</th>
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<tbody>
<tr>
<td>1.</td>
<td>I have a clear understanding of what SCIEX hopes to achieve in the next 3 years.</td>
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<td>2.</td>
<td>The Senior Management Team has clearly communicated this objective to me.</td>
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<td>3.</td>
<td>Management considers the long-term objectives when making day-to-day decisions.</td>
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<td>4.</td>
<td>Compared with two years ago, decision-making takes less time.</td>
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<td>5.</td>
<td>The employees in my group are committed to achieving SCIEX's objectives.</td>
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<td>6.</td>
<td>I receive regular progress reports on how well SCIEX is doing toward the stated objectives.</td>
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<td>7.</td>
<td>I have a basic understanding of our industry and our customers.</td>
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<td>8.</td>
<td>I am aware of the impact that my actions and decisions have on SCIEX's overall performance.</td>
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<td>9.</td>
<td>SCIEX's structure is appropriate to support the stated objectives.</td>
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<td>10.</td>
<td>Management responds to the needs and concerns of employees.</td>
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<td>11.</td>
<td>Most SCIEX managers are effective in their jobs.</td>
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<td>12.</td>
<td>Employees are held accountable for their actions.</td>
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<tr>
<td>13.</td>
<td>Managers are held accountable for their actions.</td>
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<td>14.</td>
<td>Managers make people feel valued.</td>
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<td>15.</td>
<td>I understand the key SCIEX values.</td>
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<td>16.</td>
<td>Managers' behaviors demonstrate SCIEX'S values.</td>
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<td>17.</td>
<td>Managers are concerned about employees' overall health and well-being.</td>
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<td>#</td>
<td>QUESTIONS</td>
<td>Strongly Disagree</td>
<td>Strongly Agree</td>
<td>Unknown /Unsure</td>
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<td>18.</td>
<td>Important information is usually communicated to me in a timely and understandable manner.</td>
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<td>19.</td>
<td>When there needs to be changes in my work unit, I am given the reasons for the changes.</td>
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<td>20.</td>
<td>Our work team receives sufficient information about what is happening in other departments.</td>
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<td>21.</td>
<td>I trust the information my manager shares with my work team.</td>
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<td>22.</td>
<td>I get all the information I need to do my job properly.</td>
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<td>23.</td>
<td>My manager communicates our team’s ideas and concerns to his or her manager.</td>
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<td>24.</td>
<td>My manager is an accurate, reliable source of information.</td>
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<tr>
<td>25.</td>
<td>Employees are free to speak up and say what they think without of repercussion.</td>
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<tr>
<td>26.</td>
<td>The Quarterly Employee Assemblies met my needs.</td>
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<td>27.</td>
<td>The majority of the meetings I attend area good use of my time.</td>
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<td>28.</td>
<td>I feel that I am involved in key decisions that affect my job.</td>
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<td>29.</td>
<td>I know why my job is important to the success of this organization.</td>
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<td>30.</td>
<td>My job gives me an opportunity to use my skills, knowledge and experience.</td>
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<td>31.</td>
<td>I could contribute more if given the opportunity.</td>
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<td>32.</td>
<td>I am given the responsibility and freedom to be effective in what I do.</td>
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<td>33.</td>
<td>SCIEX is a good place to work.</td>
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<td>34.</td>
<td>My job is interesting and challenging.</td>
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<td>35.</td>
<td>I worry about being fired.</td>
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<td>36.</td>
<td>The environment in my department motivates me to perform at my very best.</td>
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<td>37.</td>
<td>I am usually recognized by my manager for the contribution I make.</td>
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<td>#</td>
<td>QUESTIONS</td>
<td>Strongly Disagree</td>
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<td>38</td>
<td>Together, my manager and I set clear objectives for my job.</td>
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<td>39</td>
<td>I understand the performance standards and objectives for my job.</td>
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<td>40</td>
<td>I receive regular and constructive feedback on my performance from my manager.</td>
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<td>41</td>
<td>I understand how well I am meeting the performance standards for my job.</td>
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<td>42</td>
<td>I am sufficiently challenged at SCIEX.</td>
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<td>43</td>
<td>My manager finds opportunities to help his/her staff develop and grow.</td>
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<td>44</td>
<td>I receive helpful coaching and on-the-job training from my manager.</td>
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<td>45</td>
<td>My manager recognizes and respects my strengths and weaknesses.</td>
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<td>46</td>
<td>My manager treats all members of our work team fairly.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>My manager is an effective decision-maker and problem-solver.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>My manager provides me with sufficient direction and priorities so that I can best do my job.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>My work team places a high priority on doing its work well.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>My manager routinely gives our work team feedback.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>I understand the goals that are set for my work team.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>My work team consistently meets or exceeds its goals.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>53</td>
<td>People in my work team help each other out when the workload is heavy.</td>
<td></td>
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<tr>
<td>54</td>
<td>Compared to two years ago, there is good teamwork between management and other employees.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>My manager encourages the members of our team to work together.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>There is good teamwork between departments and work teams who depend on each other.</td>
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<td></td>
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</tr>
<tr>
<td>#</td>
<td>QUESTIONS</td>
<td>Strongly Disagree</td>
<td>Strongly Agree</td>
<td>Unknown/Unsure</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------</td>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>57</td>
<td>Management works effectively as a team.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>My manager encourages me to try out new ideas.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Employees are given the support they need (time, funds, help) to try out new ideas.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Employees are supported even if they try out new ideas that did not work.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Management recognizes employees who are creative and innovative.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>New employees are given the orientation that they need to do their jobs properly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>I have received all of the technical training that I need to do my job properly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>I am receiving the training, coaching and/or job experience which allows me to meet my current objectives.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>65</td>
<td>Employees are provided with continuous training to develop job skills.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>The employees in our work group have received training in ways to improve their effectiveness as a team.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Employee are provided with continuous education and training about the operations of this organization and its products and services.</td>
<td></td>
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</tr>
<tr>
<td>68</td>
<td>The Learning Program provides useful and relevant development opportunities.</td>
<td></td>
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</tr>
<tr>
<td>69</td>
<td>SCIEX has a diverse workforce that includes people of different races, religions and nationalities.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>70</td>
<td>SCIEX employees treat one another with respect, no matter what their age, gender or race.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>Management encourages differences in opinions and ideas.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>#</td>
<td>QUESTIONS</td>
<td>Strongly Disagree</td>
<td>Strongly Agree</td>
<td>Unknown /Unsure</td>
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</tr>
<tr>
<td>72</td>
<td>Employees are not penalized for openly disagreeing with department and/or company direction, policies, decisions, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>Most of SCIEX'S products and services have an excellent reputation for quality.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>Our finished products/services fully meet our internal or external customers' requirements.</td>
<td></td>
<td></td>
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<tr>
<td>75</td>
<td>My manager/s actions and decisions show that he/she is fully committed to very high standards of quality.</td>
<td></td>
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</tr>
<tr>
<td>76</td>
<td>My co-workers are always looking for opportunities to improve how we do things.</td>
<td></td>
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<tr>
<td>77</td>
<td>Quality standards have been established for all of our products/services.</td>
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</tr>
<tr>
<td>78</td>
<td>There are opportunities at SCIEX for me to meet my personal career or job objectives.</td>
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<tr>
<td>79</td>
<td>I am satisfied with my progress towards my career or job objectives.</td>
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<tr>
<td>80</td>
<td>There are sufficient opportunities to work in different parts of SCIEX.</td>
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<tr>
<td>81</td>
<td>Where possible, job vacancies are filled from within the organization.</td>
<td></td>
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<tr>
<td>82</td>
<td>There are good opportunities today to learn skills that will be needed in the future.</td>
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<tr>
<td>83</td>
<td>Qualified employees are given fair consideration for advancement</td>
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<tr>
<td>84</td>
<td>The MDS employees benefit plan meets my needs.</td>
<td></td>
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<tr>
<td>85</td>
<td>The MDS employee benefit plan is good compared with other companies in the city.</td>
<td></td>
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<tr>
<td>86</td>
<td>I am paid fairly compared with other SCIEX employees who are in a similar job to mine.</td>
<td></td>
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<td></td>
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<tr>
<td>87</td>
<td>I am paid fairly compared with the pay that I could get elsewhere for similar work.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>QUESTIONS</td>
<td>Strongly Disagree</td>
<td>Strongly Agree</td>
<td>Unknown/Unsure</td>
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</tr>
<tr>
<td>88.</td>
<td>In our work team, we are totally committed to meeting all of our internal/external customer' needs and expectations.</td>
<td></td>
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</tr>
<tr>
<td>89.</td>
<td>Our work team regularly asks for feedback from our internal/external customers to learn how satisfied they are with our products and services.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>90.</td>
<td>Customer service is given very high priority throughout SCIEX.</td>
<td></td>
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</tr>
<tr>
<td>91.</td>
<td>SCIEX’S policies and procedures are administered fairly.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>92.</td>
<td>Compared to two years ago, SCIEX’S policies and procedures are less bureaucratic.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>93.</td>
<td>Compared to two years ago, I have more input into decisions that affect the policies and practices in my department.</td>
<td></td>
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</tr>
<tr>
<td>94.</td>
<td>SCIEX’S policies help employees balance work and family responsibilities.</td>
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<tr>
<td>95.</td>
<td>I have all the equipment and technology I need to do my job.</td>
<td></td>
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</tr>
<tr>
<td>96.</td>
<td>I have the time to do my job.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>97.</td>
<td>Compared to two years ago, I feel less stress while working at SCIEX.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>98.</td>
<td>SCIEX has the right electronic communication tools to allow me to send/search/receive internal or external information to get my job done.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99.</td>
<td>I am confident about management’s assurances that my responses to this survey are anonymous and confidential.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>100.</td>
<td>This survey has been a good way for me to candidly express my opinion, concerns and suggestions.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>101.</td>
<td>The issues in this survey are important to me.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102.</td>
<td>This survey demonstrates that management is sincerely interested in learning about employees' opinions, concerns and suggestions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>QUESTIONS</td>
<td>Strongly Disagree</td>
<td>Strongly Agree</td>
<td>Unknown /Unsure</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>103.</td>
<td>I believe that management will use the results of this survey constructively.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

About you ..........

The following three questions are an important part of the Barometer. They will help us see if various employee groups view SCIEX differently based on the amount of time worked, the level of their positions, or functional departments.

We guarantee that this information is being collected totally anonymously and will be completely confidential. You cannot be personally identified.

Thank you for completing these three important questions. They will add a great deal to our understanding of the changes that are taking place at SCIEX.

107. Length of Service
   - o up to 3 years
   - o 4 years and more

108. Are you a Manager (i.e. are you responsible for conducting performance appraisals?)
   - o Yes
   - o No

109. Which department are you in?
   - o Marketing & PAL
   - o Product Development and Quality Assurance
   - o Manufacturing
   - o Research
   - o Corporate (Finance, HR, Business Information Systems)

104. Over the past two years, what are the most significant changes in your work team, or in the company, that helped you to be more effective in your job?

105. Over the past two years, what changes in your work team stood in the way of you being more effective in your job?

106. If you could be president for a day, what on change would you suggest to make SCIEX a better company?

A few final words ..... 

Please seal your completed Barometer in the envelope provided and deposit it no later than Friday, July 5, 1996 in the special box located in the Atrium. You have made an important contribution to building our future. Thanks you again for your input!

Thank you!
APPENDIX H

RAW SCORES RESULTS

for

MDS SCIEX LEARNING SURVEY
## Q1- Your functional area: vs Q2- Your job group:

<table>
<thead>
<tr>
<th>Q2- Your job group:</th>
<th>Scientist</th>
<th>Specialist/Designer</th>
<th>Technician/Manager (or more senior)</th>
<th>Administrative/Corporate/Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Filter</td>
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<tr>
<td>Manufacturing</td>
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<td>0</td>
<td>27</td>
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<td>6</td>
<td>7</td>
<td>37</td>
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<td>Research</td>
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<td>4</td>
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<tr>
<td>Other</td>
<td>3</td>
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<td>4</td>
<td>7</td>
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<tr>
<td>Total</td>
<td>24</td>
<td>65</td>
<td>34</td>
<td>20</td>
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Filter: No Filter
Q1- Your functional area:
Q2- Your job group:

<table>
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<tr>
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<th>Product Development</th>
<th>Research</th>
<th>Other</th>
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**Q2- Your job group:** vs Q1- Your functional area:

Filter: No Filter
Q3- People feel free to speak their minds about what they have learned without fear, threat or repercussion for disagreeing.

Q1- Your functional area:

<table>
<thead>
<tr>
<th>No Filter</th>
<th>not at all</th>
<th>to a slight extent</th>
<th>to a moderate extent</th>
<th>to a great extent</th>
<th>to a very great extent</th>
<th>Total</th>
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<tr>
<td>Manufacturing</td>
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<td>10</td>
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<td>24</td>
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<tr>
<td>Research</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>3</td>
<td>15</td>
<td>14</td>
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<td>Total</td>
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<td>19</td>
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<td>62</td>
<td>12</td>
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Filter: No Filter
Q3- People feel free to speak their minds about what they have learned without fear, threat or repercussion for disagreeing.

Q2- Your job group:

<table>
<thead>
<tr>
<th>Job Group</th>
<th>not at all</th>
<th>to a slight extent</th>
<th>to a moderate extent</th>
<th>to a great extent</th>
<th>to a very great extent</th>
<th>Total</th>
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<tbody>
<tr>
<td>Scientist</td>
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<td>1</td>
<td>2</td>
<td>8</td>
<td>1</td>
<td>12</td>
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<tr>
<td>Engineer/Technical Specialist/ Designer</td>
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<td>6</td>
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<td>Technician</td>
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<td>5</td>
<td>18</td>
<td>8</td>
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<td>34</td>
</tr>
<tr>
<td>Manager (or more senior)</td>
<td>1</td>
<td>3</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>20</td>
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<td>5</td>
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<tr>
<td>Total</td>
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<td>19</td>
<td>62</td>
<td>62</td>
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</tbody>
</table>

Filter: No Filter

Q2- Your job group: vs Q3- People feel free to speak their minds about what they have learned without fear, threat or repercussion for disagreeing.
Q4- Mistakes made by individuals, teams or departments are turned into constructive learning experiences.

Q1- Your functional area:

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<th>to a slight extent</th>
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<tr>
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<td>12</td>
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<td>3</td>
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<td>Other</td>
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<td>7</td>
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<tr>
<td>Total</td>
<td>11</td>
<td>22</td>
<td>64</td>
<td>34</td>
<td>9</td>
<td>140</td>
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**Filter: No Filter**
Q4 - Mistakes made by individuals, teams or departments are turned into constructive learning experiences.

Q2 - Your job group:

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<tr>
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<th>To a slight extent</th>
<th>To a moderate extent</th>
<th>To a great extent</th>
<th>To a very great extent</th>
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<tr>
<td>Scientist</td>
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<td>3</td>
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<tr>
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<td>2</td>
<td>2</td>
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<td><strong>22</strong></td>
<td><strong>64</strong></td>
<td><strong>34</strong></td>
<td><strong>8</strong></td>
<td><strong>140</strong></td>
</tr>
</tbody>
</table>

Filter: No Filter
Q5- There is a general feeling that it is always possible to find a better way to do something.

Q1- Your functional area:

<table>
<thead>
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<th>to a slight extent</th>
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<tr>
<td></td>
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<td>3</td>
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</tr>
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Q1- Your functional area: vs
Q5- There is a general feeling that it is always possible to find a better way to do something.

Filter: No Filter
Q5- There is a general feeling that it is always possible to find a better way to do something.

Q2- Your job group:

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Q2- Your job group: vs
Q5- There is a general feeling that it is always possible to find a better way to do something.

Filter: No Filter
### Q6 - Multiple viewpoints and open productive debates are encouraged and cultivated.

### Q1 - Your functional area:

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Q6- Multiple viewpoints and open productive debates are encouraged and cultivated.

Q2- Your job group:

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Q2- Your job group:

vs

Q6- Multiple viewpoints and open productive debates are encouraged and cultivated.
Q7- Experimentation is endorsed and championed and is a way of doing business.

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Q1- Your functional area: vs Q7- Experimentation is endorsed and championed and is a way of doing business.

Filter: No Filter
Q7 - Experimentation is endorsed and championed and is a way of doing business.

Q2 - Your job group:

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Q2 - Your job group: vs Q7 - Experimentation is endorsed and championed and is a way of doing business.

Filter: No Filter
Q1 - Your functional area: vs

Q8 - Mistakes are clearly viewed as positive growth opportunities throughout the system.

Filter: No Filter
Q8- Mistakes are clearly viewed as positive growth opportunities throughout the system.

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Q2- Your job group: vs
Q8- Mistakes are clearly viewed as positive growth opportunities throughout the system.

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Cross-Table Statistics (CrossTable)
Q9. There is a willingness to break old patterns in order to experiment with different ways of organizing and managing daily work.

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Filter: No Filter
Q9 - There is a willingness to break old patterns in order to experiment with different ways of organizing and managing daily work.

Q2 - Your job group:

Filter: No Filter
Q10 - Management practices are innovative, creative and periodically risk-taking.

Q1 - Your functional area:

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Q10- Management practices are innovative, creative and periodically risk-taking.

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Filter: No Filter

Q2- Your job group: vs Q10- Management practices are innovative, creative and periodically risk-taking.
Q11 - The quality of work life in our organization is improving.

Q1 - Your functional area:

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Q1 - Your functional area: vs Q11 - The quality of work life in our organization is improving.

Filter: No Filter

Cross-Table Statistics (CrossTable)
Q11- The quality of work life in our organization is improving.

Q2- Your job group:

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Q2- Your job group: vs
Q11- The quality of work life in our organization is improving.
Q12- There are formal and informal methods designed to encourage people to share what they learn with their peers and the rest of the organization.

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Q1- Your functional area: vs Q12- There are formal and informal methods designed to encourage people to share what they learn with their peers and the rest of the organization.

Filter: No Filter
Q2- There are formal and informal methods designed to encourage people to share what they learn with their peers and the rest of the organization.

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<td>1</td>
<td>9</td>
<td>7</td>
<td>3</td>
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<td>20</td>
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<tr>
<td>Administrative/Corporate/Other</td>
<td>5</td>
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<td>24</td>
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</tbody>
</table>

Filter: No Filter
Q13- The organization is perceived to be designed for problem-solving learning.

Q1- Your functional area:

<table>
<thead>
<tr>
<th>No Filter</th>
<th>not at all</th>
<th>to a slight extent</th>
<th>to a moderate extent</th>
<th>to a great extent</th>
<th>to a very great extent</th>
<th>Total</th>
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</thead>
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<tr>
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</tr>
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<td>Total</td>
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<td>24</td>
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<td>54</td>
<td>9</td>
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Filter: No Filter
Q13- The organization is perceived to be designed for problem-solving learning.

Q2- Your job group:

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<th>Job Group</th>
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<th>To a great extent</th>
<th>To a very great extent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3</td>
<td>5</td>
<td>4</td>
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<td>9</td>
</tr>
<tr>
<td>Engineer/Technical Specialist/Designer</td>
<td>4</td>
<td>7</td>
<td>14</td>
<td>24</td>
<td>4</td>
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<tr>
<td>Technician</td>
<td>0</td>
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<td>15</td>
<td>8</td>
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<td>34</td>
</tr>
<tr>
<td>Manager (or more senior)</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>9</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>Administrative/Corporate/Other</td>
<td>5</td>
<td>2</td>
<td>7</td>
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<td>1</td>
<td>24</td>
</tr>
<tr>
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<td><strong>9</strong></td>
<td><strong>24</strong></td>
<td><strong>48</strong></td>
<td><strong>54</strong></td>
<td><strong>9</strong></td>
<td><strong>142</strong></td>
</tr>
</tbody>
</table>

Q2- Your job group: vs Q13- The organization is perceived to be designed for problem-solving learning.

Filter: No Filter
Q14- Learning is expected and encouraged across all levels of the organization: management, research, product development, manufacturing, administration.

Filter: No Filter
Q14. Learning is expected and encouraged across all levels of the organization: management, research, product development, manufacturing, administration.

Q2. Your job group:

<table>
<thead>
<tr>
<th>Filter</th>
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<th>to a moderate extent</th>
<th>to a great extent</th>
<th>to a very great extent</th>
<th>Total</th>
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<td>Technician</td>
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<td>5</td>
<td>9</td>
<td>12</td>
<td>5</td>
<td>37</td>
</tr>
<tr>
<td>Manager (or more senior)</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>13</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Administrative/Corporate/Other</td>
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Filter: No Filter
Q15. People have an overview of the organization beyond their speciality and function and adapt their working patterns to it.

Q1. Your functional area:

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<th>to a slight extent</th>
<th>to a moderate extent</th>
<th>to a great extent</th>
<th>to a very great extent</th>
<th>Total</th>
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</table>

Filter: No Filter

Cross-Table Statistics (CrossTable)
Q15: People have an overview of the organization beyond their speciality and function and adapt their working patterns to it.

Q2: Your job group: vs

Your job group:

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<th>A slight extent</th>
<th>To a moderate extent</th>
<th>To a great extent</th>
<th>To a very great extent</th>
<th>Total</th>
</tr>
</thead>
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<td>10</td>
</tr>
<tr>
<td>Engineer/Technical Specialist/Designer</td>
<td>4</td>
<td>14</td>
<td>24</td>
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<td>1</td>
<td>1 40</td>
</tr>
<tr>
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<tr>
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<td>1</td>
<td>9</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Administrative/Corporate/Other</td>
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<td>8</td>
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<td>67</td>
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</table>

Filter: No Filter
Q16 - "Lessons learned" sessions are conducted to produce clear and permanent changes to system and practices.

Q1 - Your functional area:

Filter: No Filter
Q16- "Lessons learned" sessions are conducted to produce clear and permanent changes to system and practices.

Q2- Your job group:

<table>
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<th>Job Group</th>
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<th>to a moderate extent</th>
<th>to a great extent</th>
<th>to a very great extent</th>
<th>Total</th>
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<tr>
<td>Engineer/Technical Specialist/Designer</td>
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<td>13</td>
<td>10</td>
<td>2</td>
<td>34</td>
</tr>
<tr>
<td>Manager (or more senior)</td>
<td>4</td>
<td>9</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>20</td>
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<td><strong>38</strong></td>
<td><strong>45</strong></td>
<td><strong>25</strong></td>
<td><strong>4</strong></td>
<td><strong>140</strong></td>
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</tbody>
</table>

Filter: No Filter
Q17 - Management practices, operations, policies and practices that become obsolete and hinder the continued growth of people are removed or replaced.

Q1 - Your functional area:

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<th>to a moderate extent</th>
<th>to a great extent</th>
<th>to a very great extent</th>
</tr>
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<td>11</td>
<td>1</td>
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<tr>
<td>Research</td>
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<td>38</td>
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<td>22</td>
<td>4</td>
</tr>
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</table>

Filter: No Filter
Q17- Management practices, operations, policies and practices that become obsolete and hinder the continued growth of people are removed or replaced.

Q2- Your job group: 

<table>
<thead>
<tr>
<th>Job Group</th>
<th>Not at All</th>
<th>To a Slight Extent</th>
<th>To a Moderate Extent</th>
<th>To a Great Extent</th>
<th>To a Very Great Extent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Engineer/Technical Specialist/Designer</td>
<td>3</td>
<td>17</td>
<td>18</td>
<td>9</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Technician</td>
<td>1</td>
<td>8</td>
<td>20</td>
<td>3</td>
<td>1</td>
<td>35</td>
</tr>
<tr>
<td>Manager (or more senior)</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Administrative/Corporate/Other</td>
<td>4</td>
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<td>9</td>
<td>4</td>
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<td>23</td>
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<td>10</td>
<td>38</td>
<td>63</td>
<td>23</td>
<td>4</td>
<td>138</td>
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</tbody>
</table>

Q2- Your job group: vs Q17- Management practices, operations, policies and practices that become obsolete and hinder the continued growth of people are removed or replaced.

Filter: No Filter
Q1- Your functional area: vs 
Q18- Continuous improvement is expected and treated receptively.

Filter: No Filter
**Q2. Your job group:**

**Q18. Continuous improvement is expected and treated receptively.**

<table>
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<tr>
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<th>Score</th>
<th>Score</th>
<th>Score</th>
<th>Total</th>
</tr>
</thead>
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<td>5</td>
<td>5</td>
<td>19</td>
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<tr>
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<td>10</td>
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*Filter: No Filter*
Q19- There are clear and specific expectations of each employee to receive a specified number of hours of learning and education annually.

Q1- Your functional area:

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<tr>
<th>No Filter</th>
<th>not at all</th>
<th>to a slight extent</th>
<th>to a moderate extent</th>
<th>to a great extent</th>
<th>to a very great extent</th>
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<td>8</td>
<td>15</td>
<td>4</td>
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<td>33</td>
<td>7</td>
</tr>
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</table>

Filter: No Filter
Q2- Your job group:

Q19- There are clear and specific expectations of each employee to receive a specified number of hours of learning and education annually.

Filter: No Filter
Q20- People at all levels are specifically directed towards relevant and valuable learning opportunities inside and outside the organization.

Q1- Your functional area:

<table>
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<tr>
<th>Functional Area</th>
<th>Not at all</th>
<th>To a slight extent</th>
<th>To a moderate extent</th>
<th>To a great extent</th>
<th>To a very great extent</th>
<th>Total</th>
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</thead>
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<td>12</td>
<td>2</td>
<td>40</td>
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<tr>
<td>Product Development</td>
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<td>16</td>
<td>12</td>
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<td>1</td>
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<td>44</td>
<td>48</td>
<td>34</td>
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</table>

Q1- Your functional area: vs
Q20- People at all levels are specifically directed towards relevant and valuable learning opportunities inside and outside the organization.

Filter: No Filter

Cross-Table Statistics (CrossTable)
Q20- People at all levels are specifically directed towards relevant and valuable learning opportunities inside and outside the organization.

Q2- Your job group:

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<td>6</td>
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<td>Technician</td>
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<td>7</td>
<td>13</td>
<td>11</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>Manager (or more senior)</td>
<td>1</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Administrative/Corporate/Other</td>
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<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td><strong>44</strong></td>
<td><strong>40</strong></td>
<td><strong>34</strong></td>
<td><strong>3</strong></td>
<td><strong>143</strong></td>
</tr>
</tbody>
</table>

Filter: No Filter

Q2- Your job group:

vs

Q20- People at all levels are specifically directed towards relevant and valuable learning opportunities inside and outside the organization.
Q21 - Cross-functional learning opportunities are expected and organized on a regular basis, so that people understand the functions of others in different jobs of related importance.

<table>
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<th>Research</th>
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<tr>
<td></td>
<td>3</td>
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</tr>
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</table>

Q1 - Your functional area:

Q21 - Cross-functional learning opportunities are expected and organized on a regular basis, so that people understand the functions of others in different jobs of related importance.

Filter: No Filter
Q21- Cross-functional learning opportunities are expected and organized on a regular basis, so that people understand the functions of others in different jobs of related importance.

Q2- Your job group:

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<th>To a moderate extent</th>
<th>To a great extent</th>
<th>To a very great extent</th>
<th>Total</th>
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<tr>
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<td>7</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Engineer/Technical Specialist/Designer</td>
<td>14</td>
<td>12</td>
<td>19</td>
<td>7</td>
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</tr>
<tr>
<td>Technician</td>
<td>6</td>
<td>11</td>
<td>11</td>
<td>4</td>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>Manager (or more senior)</td>
<td>3</td>
<td>8</td>
<td>9</td>
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<td>0</td>
<td>20</td>
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<tr>
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<td>5</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
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<td>43</td>
<td>50</td>
<td>18</td>
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Filter: No Filter
Middle managers are seen as having a primary role in keeping the learning process running smoothly throughout the organization.

Q1 - Your functional area:

<table>
<thead>
<tr>
<th>Functional Area</th>
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<th>To a moderate extent</th>
<th>To a great extent</th>
<th>To a very great extent</th>
<th>Total</th>
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<tbody>
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Q22 - Middle managers are seen as having a primary role in keeping the learning process running smoothly throughout the organization.

Filter: No Filter
Q22. Middle managers are seen as having a primary role in keeping the learning process running smoothly throughout the organization.

Q2. Your job group:

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Q2. Your job group: vs Q22. Middle managers are seen as having a primary role in keeping the learning process running smoothly throughout the organization.

Filter: No Filter
Q23- The unexpected is viewed as an opportunity for learning.

Q1- Your functional area:

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Filter: No Filter
### Q23 - The unexpected is viewed as an opportunity for learning.

**Q2 - Your job group: vs**

**Q23 - The unexpected is viewed as an opportunity for learning.**

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**Filter: No Filter**

Cross-Table Statistics (CrossTable)
Q1- Your functional area:
vs
Q24- People look forward to improving their own competencies as well as those of the whole organization.

Filter: No Filter
Q2- Your job group: vs
Q24- People look forward to improving their own competencies as well as those of the whole organization.

Filter: No Filter
The systems, structures, policies and practices of the organization are designed to be adaptive, flexible and responsive to internal and external influences.

**Q1 - Your functional area:**

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**Filter: No Filter**
Q25- The systems, structures, policies and practices of the organization are designed to be adaptive, flexible and responsive to internal and external influences.

Q2- Your job group:

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Filter: No Filter

Cross-Table Statistics (CrossTable)
Q26 - Presently, even if the environment is complicated, chaotic and active, we are not on overload.

Q1 - Your functional area:

Filter: No Filter

Cross-Table Statistics (CrossTable)
Presently, even if the environment is complicated, chaotic and active, we are not on overload.

### Q2- Your job group:

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Filter: No Filter

Q2- Your job group: vs
Q26- Presently, even if the environment is complicated, chaotic and active, we are not on overload.
Q1- Your functional area:

vs

Q27- There is a healthy, manageable level of stress that assists in promoting learning.

Filter: No Filter
Q27- There is a healthy, manageable level of stress that assists in promoting learning.

Q2- Your job group:

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Q2- Your job group: vs Q27- There is a healthy, manageable level of stress that assists in promoting learning.

Filter: No Filter

Cross-Table Statistics (CrossTable)
Q28. Continuous improvement is practised as well as preached.

Q1. Your functional area:

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Q1 - Your functional area:

vs

Q28 - Continuous improvement is practised as well as preached.

Filter: No Filter
Q28. Continuous improvement is practised as well as preached.

Q2. Your job group:

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Cross-Table Statistics (CrossTable)
Q29- The difference between training/education and learning is clearly understood. (Training and education can be so conducted that no learning takes place.)

Q1- Your functional area:

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Cross-Table Statistics (CrossTable)
Q29 - The difference between training/education and learning is clearly understood. (Training and education can be so conducted that no learning takes place.)

Q2 - Your job group:

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Filter: No Filter
Q30- People are encouraged and provided with the resources to become self-directed learners.

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Q1- Your functional area: vs Q30- People are encouraged and provided with the resources to become self-directed learners.

Filter: No Filter
Q30- People are encouraged and provided with the resources to become self-directed learners.

Q2- Your job group:

Filter: No Filter

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Q31- There is a formal, on-going education program to prepare middle managers in their new roles as facilitators, coaches and leaders.

Q1- Your functional area:

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Q1- Your functional area: vs

Q31- There is a formal, on-going education program to prepare middle managers in their new roles as facilitators, coaches and leaders.

Filter: No Filter

Cross-Table Statistics (CrossTable)
Q2- There is a formal, on-going education program to prepare middle managers in their new roles as facilitators, coaches and leaders.

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Q2- Your job group: vs
Q31- There is a formal, on-going education program to prepare middle managers in their new roles as facilitators, coaches and leaders.

Filter: No Filter
Q32- Recognition of your own learning style and those of co-workers is used to improve communication and over-all organizational learning.

Q1- Your functional area:

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Filter: No Filter
Q2- Your job group: vs
Q32- Recognition of your own learning style and those of co-workers is used to improve communication and over-all organizational learning.

Filter: No Filter
Management is sensitive to learning and development differences in their employees, realizing that people learn and improve their situations in different ways.

Q1- Your functional area:

Filter: No Filter
Q33- Management is sensitive to learning and development differences in their employees, realizing that people learn and improve their situations in different ways.

Q2- Your job group:

vs

Q2- Your job group:

Filter: No Filter
Q34 - There is sufficient time scheduled into people's calendars to step back from day-to-day operations and reflect on what is happening in the organization.

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**Filter: No Filter**
Q2- Your job group:

Q34- There is sufficient time scheduled into people's calendars to step back from day-to-day operations and reflect on what is happening in the organization.

Filter: No Filter
Q1- Your functional area:

VS

Q35- There is direction set, and resources allocated to bring about meaningful and lasting learning.

Filter: No Filter
Q2- Your job group:

Q35- There is direction set, and resources allocated to bring about meaningful and lasting learning.

Filter: No Filter
Q36: Teams are recognized and rewarded for their innovative and paradigm breaking solutions to problems.

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**Filter:** No Filter
Q2 - Your job group:

vs

Q36 - Teams are recognized and rewarded for their innovative and paradigm breaking solutions to problems.

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Q37 - Managers have considerable skills for gathering information and developing their abilities to cope with demanding and changing management situations.

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Filter: No Filter
Q37 - Managers have considerable skills for gathering information and developing their abilities to cope with demanding and changing management situations.

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Q2 - Your job group:  
vs  
Q37 - Managers have considerable skills for gathering information and developing their abilities to cope with demanding and changing management situations.

Filter: No Filter
Q38- Managers enable their staffs to become self-developers, and learn how to improve their performances.

Q1- Your functional area: vs

Q38- Managers enable their staffs to become self-developers, and learn how to improve their performances.

Filter: No Filter
Q38- Managers enable their staffs to become self-developers, and learn how to improve their performances.

Q2- Your job group:

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Q2- Your job group: vs
Q38- Managers enable their staffs to become self-developers, and learn how to improve their performances.

Filter: No Filter

Cross-Table Statistics (CrossTable)
Suzanne Wolfe

APPENDIX I

From: Mark Esterman [SMTP: greatocean@tidalwave.net]
Reply To: greatocean@tidalwave.net
Sent: 1999/02/25 3:47 PM
To: Karima West
Subject: Re: Request for permission - copyright

> Mark Esterman
> Great Ocean Publishers, Inc.
> 1823 North Lincoln Street
> Arlington, VA
> >
> Hello Mark,
> > As per our telephone discussion last Thursday, please grant permission to reproduce the Learning Organization Assessment instrument for the following purpose:
> > Suzanne Wolfe, Director of Human Resources at MDS SCIEX, has ordered 62 copies of the Learning Organization Assessment (copyright 1995, Great Ocean Publishers, Inc.) for use as a data collection instrument in her investigation of culture and learning at MDS SCIEX.
> > Both documents would be appropriately cited within the text and appear in the appendix of the Master's thesis in reduced original formats to fit the size of this publication. The copyright notices accompanying the book and the questionnaire will be reproduced on the documents in entirety. The following note would be added to each: "Reproduced with permission of Great Ocean Publishers, Inc.". Copies of the thesis are intended for academic and corporate libraries. Parts of the thesis may later be incorporated into articles for academic and commercial journals. If so, both documents would be cited in strict accordance with editorial requirements.
> > Thank you for providing such an insightful research instrument and contributing to our understanding of our organization.
> > Sincerely,
> > Karima West, M.Ed., Program Evaluator
> > MDS SCIEX
> > 71 Four Valley Drive
> > Concord, Ontario, Canada L4K 4V8
> > (905) 660-9006 ext. 241

Dear Ms. West,

Thank you for your letter, and now your phone call, which reminded me that I had not responded to your letter. I apologize for not responding sooner.

This is to confirm that Ms. Wolfe may proceed with her use and reference to the Learning Organization Assessment published by us, in accord with the terms we discussed and detailed in your letter.

If you have any further questions, please do not hesitate to call.

With best wishes,
Mark Esterman, President
Great Ocean Publishers