

**STRATEGY  
RESEARCH  
PROJECT**

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**ANALYSIS OF LEARNING ORGANIZATION THEORIES AND  
THEIR APPLICATION TO PUBLIC ORGANIZATIONS**

**BY**

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USAWC STRATEGY RESEARCH PROJECT

**Analysis of Learning Organization Theories  
and their Application to Public Organizations**

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## ABSTRACT

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There has been much written in the last few years on the concept of learning organizations. Learning organization concepts have been applied to private organizations with some success. The question remains--can these same learning organization characteristics apply as effectively to public-sector organizations?

Many theories of learning organizations exist. Those of Peter Senge, Michael Marquardt, and David Garvin are discussed.

Although there are inherent impediments to the adoption of learning organization concepts by public organizations, there are some actions that can be taken to provide a more hospitable environment. Among them are the need for incentives for individuals, and organizations; removal of hierarchies/boundaries; collaborative tools; cultural changes; personnel training; and, most importantly, support from Congress during the change process.



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## LEARNING ORGANIZATION THEORIES AND THEIR APPLICATION TO GOVERNMENT ORGANIZATIONS

There has been much written in the last few years on the concept of learning organizations. This paper will focus on the writing of several authors on the subject of learning organizations, distill from their work a set of factors/elements of successful learning organizations, and analyze their usefulness to government organizations.

### LEARNING ORGANIZATIONS DEFINED

A number of people have written on the concept of "learning" organizations. Among the most notable is Peter Senge, author of The Fifth Discipline: The Art and Practice of the Learning Organization, and Michael Marquardt, author of Building the Learning Organization. Peter Senge describes learning organizations rather idyllically as places "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.”<sup>1</sup> Table 1 includes this definition and several others found in the literature.

Definitions of Learning Organizations	Authors
<p><b>Learning Organizations are 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.</b></p>	<p>P. Senge. <i>The Fifth Discipline: The Art &amp; Practice of the Learning Organization.</i> New York, 1990</p>
<p><b>Learning organizations are companies that are continually transforming themselves to better manage knowledge, utilize technology, empower people, and expand learning to better adapt and succeed in the changing environment.</b></p>	<p>M. Marquardt. <i>Building the Learning Organization: a System Approach to Quantum Improvement and Global Success.</i> New York, 1996</p>
<p><b>The learning organization has been characterized as having the capability to adapt to changes in its environment.</b></p>	<p>R. Hedberg. <i>Handbook of Organizational Design.</i> Oxford, 1981</p>
<p><b>The learning organization is a systems level concept with particular characteristics or a metaphor for organizations and organizing.</b></p>	<p>G. Morgan, <i>Imaginization.</i> SAGE, Beverly Hills, CA., 1993</p>

Table 1 Learning Organization Definitions

## ORGANIZATIONAL LEARNING VERSUS LEARNING ORGANIZATIONS

Before we delve more deeply into the various authors' views of learning organizations, it is first useful to differentiate between the similar and related constructs of "organizational learning" and "the learning organization" since they are often used interchangeably.

Stanley Slater and John Narver summarize that "at its most basic level, organizational learning is the development of new knowledge or insights that have the potential to influence behavior."<sup>2</sup> Presumably, learning facilitates behavior change that leads to improved performance. They state that organizational learning is distinguishable from personal learning by information dissemination and accomplishing a shared (organization) interpretation of the information.<sup>3</sup>

Thus, "organizational learning" is something that takes place in organizations, whereas the "learning organization" is a particular type or form of organization in and of itself. For a list of organizational learning definitions see Table 2.

Definitions of Organizational Learning	Authors/Cites
At its most basic level, organizational learning is the development of new knowledge or insights that have the potential to influence behavior.	S. Slator & J. Narver. "Marketing Orientation & the Learning Organization." <i>Journal of Marketing</i> , July, 1993.
Organizational learning is a construct used to describe certain types of activity (or processes) that may occur at any one of several levels of analysis.	M. Dodgson. "Organizational Learning: A Review of Some Learning Organizational Studies." <i>Organization Studies</i> . 1993.
Organizational learning means the process of improving actions through better knowledge and understanding.	C. Fiol & M. Lyles. "Organization Learning." <i>Academy of Management Review</i> , October, 1985
An entity learns if, through its processing of information, the range of its potential behaviors is changed.	G. Huber. "Organizational Learning: the Contributing Processes and the Literature." <i>Organization Science</i> , February, 1991.
Organizational learning is part of an organizational change process.	E. Schein. "How can organizations learn faster?" <i>Sloan Management Review</i> , Winter, 1993.
Organizational learning is a process of detecting and correcting error.	C. Argyris. "Double Loop Learning in Organizations," <i>Harvard Business Review</i> , September-October, 1977.
Organizations are seen as learning by encoding inferences from history into routines that guide behavior.	B. Levitt, & J. March, "Organizational Learning." <i>American Review of Sociology</i> , Vol. 14, 1988.

Table 2 Organizational Learning Definitions

## ANALYSIS OF LEARNING ORGANIZATION THEORIES

For purposes of this analysis, three theories will be reviewed. The first theory to be discussed is that of Peter Senge and his book The Fifth Discipline: The Art and Practice of the Learning Organization;<sup>4</sup> the second theory will be that of Michael Marquardt and his book, Building the Learning Organization: A System Approach to Quantum Improvement & Global Success;<sup>5</sup> and, third, will be from David Garvin and his article "Building a Learning Organization."<sup>6</sup>

### PETER SENGE

The first author, Peter Senge, is the author who is credited for popularizing the concept of learning organizations. He states that learning organizations must have the following five attributes: systems thinking, personal mastery, mental models, shared vision, and team learning. The first three disciplines have particular application for the individual participant, and the last two have group application. Senge writes of the disciplines "...these might just as well be called the leadership disciplines as the learning disciplines. Those who excel in these areas will be the natural leaders of learning organizations."<sup>7</sup> Systems thinking has the distinction of being the "fifth discipline" since it serves to make the results of

the other disciplines work together for business benefit. The following is a short synopsis of each of the disciplines.

### **Systems Thinking**

Systems thinking is based on systems dynamics; it is highly conceptual; it provides ways of understanding practical business issues; it looks at systems in terms of particular types of cycles (archetypes); and it includes explicit system modeling of complex issues.<sup>8</sup>

The practice of systems thinking starts with understanding a simple concept called "feedback" that shows how actions can reinforce or counteract (balance) each other. It builds to learning to recognize types of "structures" that recur again and again: the arms race is a generic or archetypal pattern of escalation, at its heart it is no different from turf warfare between two street gangs, the demise of a marriage, or the advertising battles of two consumer goods companies fighting for market share. Eventually, systems thinking, forms a rich language for describing a vast array of interrelationships and patterns of change. Ultimately, it simplifies life by helping us to see the deeper patterns lying behind the events and details. The essence of the discipline of systems thinking lies in a shift of mind set: seeing interrelationships rather than linear

cause-effect chains and seeing processes of change rather than snapshots.<sup>9</sup>

### **Personal Mastery**

Personal mastery is the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively. Senge states that "using the subconscious is important in personal mastery." The author states that "people committed to continually developing personal mastery practice some form of "mediation." Whether it is through contemplative prayer or other methods of simply "quieting" the conscious mind, regular meditative practice can be extremely helpful in working more productively with the subconscious mind."<sup>10</sup>

### **Mental Models**

Mental models are deeply ingrained assumptions, generalizations, or, even pictures or images that influence how we understand the world and how we take action. The discipline of working with mental models starts with turning the mirror inward, learning to unearth our internal pictures of the world, to bring them to the surface and hold them rigorously to scrutiny. It also includes the ability to carry on "learningful" conversations that balance inquiry and advocacy, where people



expose their own thinking effectively and make that thinking open to the influence of others.<sup>11</sup>

### **Shared Vision**

The practice of shared vision involves the skills of unearthing shared "pictures of the future" that foster genuine commitment and enrollment rather than compliance. Shared vision is vital for the learning organization because it provides the focus and energy for learning, shared vision, however, must be built on personal visions. If people don't have their own vision, all they do is "sign up" for someone else's. Shared vision generates high levels of creative tension.<sup>12</sup>

### **Team Learning**

The discipline of team learning starts with "dialogue," the capacity of members of a team to suspend assumptions and enter into a genuine "thinking together."

The discipline of dialogue also involves learning how to recognize the patterns of interaction in teams that undermine learning. The patterns of defensiveness are often engrained in how a team operates. If unrecognized, they undermine learning. If recognized and surfaced creatively, they can actually accelerate learning.<sup>13</sup>

The discipline of team learning involves mastering the practices of dialogue and discussion, the two distinct ways that teams converse. In dialogue, there is the free and creative exploration of complex and subtle issues, a deep "listening" to one another and suspending of one's own views. Dialogue and discussion are potentially complementary, but most teams lack ability to distinguish between the two and to move consciously between them.<sup>14</sup>

DAVID GARVIN

David Garvin, in reviewing several companies that pass his definitional test of learning organizations, has identified five "building blocks" of learning organizations. He finds that learning organizations are skilled at five main activities: systemic problem solving, experimentation with new approaches, learning from their own experience and past history, learning from the experiences and best practices of others, and transferring knowledge quickly and efficiently throughout the organization. A distinctive mindset, tool kit, and pattern of behavior accompany each.<sup>15</sup>

He believes that companies that create systems and processes that support these activities and integrate them into the fabric of daily operations can manage their learning more effectively. A short discussion of each building block follows:

## **Systematic Problem Solving**

This activity relies on the philosophy and methods of the quality movement. Its underlying ideas include:

1. Relying on the scientific method, rather than guess work, for diagnosing problems (what Deming calls the "Plan, Do, check. Act" cycle and others refer to as "hypothesis-generating, hypothesis-testing" techniques).
2. Insisting on data, rather than assumptions, as background for decision making (what quality practitioners call "fact-based management").
3. Using simple statistical tools (Histograms, Pareto charts, correlations, cause-and-effect diagrams) to organize data and draw inferences.<sup>16</sup>

## **Experimentation**

This activity involves the systematic searching for and testing of new knowledge. But unlike problem solving, experimentation is usually motivated by opportunity and expanding horizons, not by current difficulties. It may take two forms: ongoing programs or one-of-a-kind demonstration projects.<sup>17</sup>

### **Learning from Past Experience**

Learning organizations were found to review their successes and failures, assess them systematically, and record the lessons in a form that employees find open and accessible. A few companies have established processes that require their managers to periodically think about the past and learn from their mistakes.<sup>18</sup>

### **Learning from Others**

Learning often comes from outside the immediate environment and learning organizations often gain new insight by using a different perspective. The use of benchmarking and environmental scanning is prevalent.<sup>19</sup>

### **Transferring Knowledge**

For learning to be effective, it must be 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 were found to accomplish this. They include: written, oral, and visual reports; site visits and tours; personnel rotation programs; and, education and training programs.<sup>20</sup>

In conclusion, David Garvin advises that organizations that wish to become learning organizations should begin by taking a few simple steps. They are: 1) foster an environment that is conducive to learning; 2) open up boundaries and stimulate the exchange of ideas; 3) create learning forums to wrestle with new knowledge and consider its implications.<sup>21</sup>

#### MICHAEL MARQUARDT

Michael Marquardt has worked with over 50 of the top private learning organizations from around the world and noted that most of the literature to date only focuses on one aspect, i.e., team dynamics, or organization structure, or technology, etc. This has led him to conclude that the "full richness of the learning organization incorporates five distinct subsystems—learning, organization, people, knowledge, and technology."<sup>22</sup> If any subsystem is weak, the effectiveness of the other subsystems is significantly weakened. His model is the most complete of those reviewed as it addresses all levels of organization. A discussion of each subsystem follows:

#### **Learning Subsystem**

There are three levels of learning present in learning organizations. They are: individual learning, group or team

learning, and organizational learning. Individual learning refers to the change of skills, insights, knowledge, attitudes, and values acquired by a person through self-study, technology-based instruction, insight, and observation. Group or team learning alludes to the increase in knowledge, skills, and competency, which is established by and within groups. Organizational learning is enhanced intellectual and productive capacity gained through corporate-wide commitment. It occurs through shared insights, knowledge, and mental models of members of the organization. It also builds on past knowledge and experience—that is, institutional mechanisms used to retain knowledge.<sup>23</sup>

### **Organization Subsystem**

The organization is the structure and body in which and for which the individual, group, and organization-wide learning occurs. The structure and strategies of a company must change dramatically. To flourish as a learning organization, the company needs to reconfigure itself through an attentive focus on the four dimensions of the organization subsystem: vision, culture, strategy, and structure.<sup>24</sup>

### **People Subsystem**

Marquardt states that "people are the pivotal part of learning organizations because only people, in fact, learn."<sup>25</sup> People are the masters who can take data and transform it into valuable knowledge for personal and organizational use. To be an effective part of organizational learning, these groups of people need to be empowered and enabled which leads to several new roles for leaders, i.e., instructor, coach, mentor, and knowledge manager.<sup>26</sup>

### **Knowledge Subsystem**

Knowledge is seen as the main resource used in performing work in an organization. The organization's traditions, culture, technology, operations, systems, and procedures are all based on knowledge and expertise. It is the "food of the learning organization."<sup>27</sup> The knowledge subsystem is composed of acquisition of knowledge, creation of knowledge, storage of knowledge and transfer and utilization of knowledge.<sup>28</sup>

### **Technology Subsystem**

Organizations that know how to harness technology to enhance their learning capacity will possess a decided competitive advantage. Marquardt focused on three distinct dimensions of technology as they relate to learning organizations: information

technology, technology-based learning, and electronic performance support systems.<sup>29</sup>

In summary, of the three views of Senge, Garvin and Marquardt, it appears that while there is some overlap, a common epistemology of learning organizations has not yet been fully developed. Critical research of the subject has not yet been performed.<sup>30</sup>

All do seem to agree that systems thinking is required, two see shared visions necessary, as well as examination of mental models, and use of technology for transferring knowledge as elements. Marquardt did include all of Senge's disciplines within his model as the skills needed for organizational learning. All three did agree that there are 5 elements, although they are not the same five. The following three tables depict their basic elements.

<b>Senge - 5 Disciplines</b>
Systems Thinking
Personal Mastery
Shared Vision
Mental Models
Team Learning

Table 3 Peter Senge Disciplines



<b>Garvin - 5 Building Blocks</b>
Systematic Problem Solving
Experimentation With New Approaches
Learning From Past Experience
Learning From Others Best Practice
Transferring Knowledge

Table 4 David Garvin Building Blocks

<b>Marquardt</b>	<b>5 Subsystems</b>
Learning	Levels - individual, group or team, organization Types - adaptive, anticipatory, deuterio, action Skills - systems thinking, mental models, personal mastery, team learning, shared vision, dialogue
Organizations	Shared vision, culture, strategy and structure
Knowledge	Acquisition, creation, storage & retrieval, transfer and utilization
People	Employees, customers, alliance partners, community, vendors & suppliers, managers & leaders
Technology	Information technology, technology-based learning, Electronic Performance Support Systems

Table 5 Michael Marquardt Subsystems

## APPLICATION TO PUBLIC SECTOR

To date, most of the literature written on the subject of learning organizations focuses on their application to private organizations. Given that there are characteristics of highly effective organizations in the private sector that have been called learning organizations, the next question to address is—can these same learning organization characteristics also apply effectively to public-sector organizations? What, if anything, must government apply differently than private organizations?

Although many people have written of the similarities between public and private organizations, there are some fundamental differences between public and private organizations.

An initial difference is that public organizations have traditionally been hierarchically organized. At the top are the few who are empowered to give orders, request information, and expect lower-level employees to carry out them. Although private organizations have had a history of being organized hierarchically, many are moving rapidly to an organizational structure that is flatter and team oriented. Although some public organizations are moving in this direction, most still lag behind due to requirements of inflexible personnel system and bargaining unit requirements.

In theory, a hierarchical type of structure is very conducive to the introduction of change from the top. However, this does not prove true in many instances. Government agencies are not always free to modify behavior to reflect new knowledge and insights. One of the reasons is that such modifications may conflict with some stakeholders' expectation. To introduce any meaningful change, agencies must first educate not only the public at large but also the same special-interest groups that are likely to be upset with the proposed changes.<sup>31</sup>

While introduction of change from the top is difficult, there are even bigger obstacles when changes are initiated at the bottom. A change initiative begun by street-level bureaucrats—that is, by civil servants that regularly interact with service recipients—is likely to parallel the corresponding changes in the expectations of some clientele groups but not necessarily of those that are the most potent in terms of political and economic influence. Consequently, in the context of the bureaucratic culture, such an initiative may be perceived as a challenge to the values, mandate, knowledge, or leadership of those at the top. As a result, productivity challenges facing the public manager are much more complicated than they appear. The managers must not only create a learning environment to facilitate a move forward they must also prevent productivity

from slipping backward when employees experience frustration due to an ill-planned and executed change.<sup>32</sup>

An additional impediment to the building of a learning organization in a hierarchical organization is the built in inhibitors to collaboration, both horizontally and vertically across the organization. This is often compounded in an organization that includes a military chain of command. Ways to deal with this can be found in the development of knowledge bases or through collaborative information software programs like Lotus Notes. However, public organizations tend to lack the ability to purchase new systems for which a clear output does not exist. How do you cost the effectiveness of collaboration and communication in an organization? So far, most organizations are saddled with an electronic mail system that comes as part of a general automation word processing, spreadsheet, program that is poor substitute.

Peter Senge says that a learning organization needs to utilize systems thinking, where people are able to see entire processes and analyze second and third order consequences. This is extremely difficult to do in a hierarchically structured organization.<sup>33</sup>

Garvin suggested that learning organizations are skilled at five main activities: systematic problem solving, experimentation, and new approaches, learning from their own

experience, and learning from the experience of others.<sup>34</sup>

However, to guide an agency in selecting the areas in which these skills should be applied, public managers should first be strategists. They must develop an accurate map of the agency's strengths and weaknesses as they relate to its mission, its opportunities, and dangers that threaten it from the outside. An agency will best benefit from becoming a learning organization if it can take advantage of its strengths and opportunities to compensate for its weaknesses or to avoid possible threats.

Besides the strategic analysis process, certain other conditions must exist to facilitate the emergence of a learning organization that enhances productivity. One author on this subject, Arie Halachmi, has stated that there are certain other conditions that must exist to facilitate the emergence of a learning organization that enhances productivity. These conditions include commitment from the top, mobilization of new resources, patience, a motivated workforce, benchmarking, educating the media and the public, and proper lead time and preparation.<sup>35</sup>

One key factor is that organizational learning cannot be achieved by siphoning resources that are earmarked for current operations. As employees must continue to operate with fewer resources, new activities result in increased pressure that is not conducive to learning.<sup>36</sup>

Public organizations must employ highly competent, professional individuals with skills and specialties in areas that have no parallel in the private sector. The government personnel systems need to have mechanisms similar to those in the private sector in order to compete for these people in the marketplace. To date, few public organizations have instituted pay-for-performance systems. Nor are they able to hire and remove employees from the workforce quickly in order to adjust to changing requirements. This means that they are faced with re-training personnel to meet new requirements. This is very time consuming and costly and must be factored into the change process.

One key difference between public and private is the fact that there is no profit motive in public organizations to drive the need for efficiency. Certainly declining budgets attempt to push costs down, but they have proven generally ineffective as a profit motive substitute. The current administration has passed the Government Performance and Results Act (GPRA) that is believed to provide some of this motive and drive cost efficiency and customer satisfaction. The GPRA requires that every government organization at the federal level implement a strategic planning process to include measures of efficiency and measures of customer satisfaction. It is too early to tell if this will be effective. In theory, Congress is to use it to help

them manage the budgets of these organizations. It is not clear what they will do with the information. If an organization is meeting their goals, in theory they should get the funds they request the following year. If an organization is not able to meet their goals, will Congress cut their funds, or will they recognize that the organization may need more resources to meet their requirements. Does cutting the funds of an organization that is not meeting their goals only cause them to slip farther behind in meeting them? Yet if they receive the funds they request, are they not being rewarded for inefficiency? At best, it seems that Congress will only be able to use it as a hammer on the heads of the organizations not meeting their goals.

One important characteristic of a learning organization is that it seeks to automate mundane tasks and builds learning into the process. In order to do this; new expert-system software must be developed. This new information technology provides personnel the tools to complete more steps in the process faster, eliminate errors, and reduce cost. Unfortunately it also means that it is not only a change in the way work is performed but will also reduce staffing needs. It is generally harder for public organizations to obtain support within the organization if the outcome is a reduction in staffing.

Learning organizations in the private sector are able to change their direction easier based upon environment changes and

market opportunities. One such example, was the decision made by Bill Gates to change the direction Microsoft was heading—support for main frame computers—to a focus on internet-based programs. Granted public organizations receive their mission from Congress, they are often faced with changes in the environment that might provide them with an opportunity to change their mission. An example of this is the fact that currently many public organizations are trying to change to meet the needs of their customers. Making these changes often results in strained resources. People must continue to perform the current mission/process, development and implement the new mission/process at the same time. Congress needs to recognize that organizations need to be provided with additional resources during these periods of transitions.

In addition, learning organizations do not operate optimally at first. Private-sector organizations see mistakes as learning opportunities and may even encourage mistakes for their learning benefits. Because public organizations are watched closely by the media, who tend to dwell on failures, there is little incentive to innovate or experiment even on a limited basis.<sup>37</sup>

Last, but certainly no least, is the culture and climate of learning organizations. Culture is the deeply rooted set of values and beliefs that provide norms for behavior in the organization.<sup>38</sup> Climate describes how the organization



operationalizes its culture, the structures and processes that facilitate the achievement of the desired behaviors.<sup>39</sup> Culture and climate must reinforce each other.

Stanley Slator and John Narver, among others, have found that the hardest part of collaboration is not the technology piece; it's overcoming the cultural barriers, especially the mind-set that holding information is more valuable than sharing it.<sup>40</sup> In private organizations, those organizations that can show that sharing knowledge solves customer problems faster, thus translating into higher sales, or solving production problems faster, thus reducing costs and increasing profits, are able to help employees to develop a sharing culture.<sup>41</sup> Public organizations, where no such profit motive exists, have a more difficult time in encouraging personnel to share information.

Some of the barriers to sharing in public organizations include a long history of not sharing because of the belief that "knowledge is power," or not having incentives for sharing, such as team awards. With team awards personnel are rewarded for the accomplishment of a project and to do that they must collaborate effectively. Public organizations are slowly attempting to develop such awards, but they are behind private organizations in the area and are often stymied by bargaining unit organizations and personnel rules and regulations.

Many private organizations have found some success in the use of programs such as Lotus Notes which provide a way for personnel to share information more easily than via e-mail. With e-mail, you must know the person who has the information in order to obtain it. With Lotus Notes, it is easier to "pulse" the organization and locate someone who can help.<sup>42</sup> In many large, geographically spread out public organizations, a program such as Lotus Notes would greatly facilitate this process as they have in private organizations.

Some authors have written about the problem of getting personnel to use and input data into the program. This can be facilitated by awards for contributions, or by having personnel dedicated to inputting information into the program. "Knowledge Facilitators," for whom this function is part of their job description, can serve as "knowledge miners" throughout the organization. Since learning is most often found in the mistakes people make, a knowledge facilitator can serve as the person to document the learning in a non-attributional way. Thus sparing embarrassment and yet ensuring that others may benefit from it. Given the fact that public organizations are often highlighted in the media for mistakes made, any information of this nature is certainly more sensitive in a public organization and should be included only in an intranet.

## Conclusions

From the above discussion, it is clear that becoming a learning organization in a public organization has some organizational, cultural, and financial impediments that must be overcome. Among them are the need for incentives for individuals, and organizations; removal of hierarchies; collaborative tools; cultural changes; personnel training; and, support from Congress.

Clearly the most important one is congressional support. Congress must be willing to provide the additional resources during periods of change that are required and be patient and supportive during the change process.

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ENDNOTES

<sup>1</sup> Peter Senge, The Fifth Discipline: The Art and Practice of the Learning Organization. (New York, NY: Doubleday), 1990.

<sup>2</sup> S. F. Slator and J.C. Narver, "Marketing Orientation & the Learning Organization," Journal of Marketing (July 1995):63-75.

<sup>3</sup> Ibid.

<sup>4</sup> Senge.

<sup>5</sup> Michael Marquardt, Building the Learning Organization: a System Approach to Quantum Improvement & Global Success (New York:McGraw-Hill,1996).

<sup>6</sup> David Garvin, "Building a Learning Organization," Business Credit (January 1994).

<sup>7</sup> Senge, 360.

<sup>8</sup> Ibid, 68.

<sup>9</sup> Ibid, 69.

<sup>10</sup> Ibid, 141.

<sup>11</sup> Ibid, 175.

<sup>12</sup> Ibid, 206.

<sup>13</sup> Ibid, 236.

<sup>14</sup> Ibid, 238-249.

<sup>15</sup> Garvin, 21.

<sup>16</sup> Ibid, 21.

<sup>17</sup> Ibid, 22-23.

<sup>18</sup> Ibid, 23-24.

<sup>19</sup> Ibid, 24-25.

<sup>20</sup> Ibid, 25-26.

<sup>21</sup> Ibid, 28.

<sup>22</sup> Marquardt, 20.

<sup>23</sup> Ibid, 20-22.

<sup>24</sup> Ibid, 24.

<sup>25</sup> Ibid, 25-26.

<sup>26</sup> Ibid, 26.

<sup>27</sup> Ibid, 129.

<sup>28</sup> Ibid, 26-27.

<sup>29</sup> Ibid, 27-28.

<sup>30</sup> Dennis Sandow & Larry Rhodes, "The Wizard's Curtain: a Reply from Oregon," Human Resource Development Quarterly no. 7 (Summer, 1996): 185.

<sup>31</sup> Arie Halachmi, "The Pharaoh Syndrome & the Challenge of Public-Sector Productivity," National Productivity Review (Winter, 1994-1995).

<sup>32</sup> Halachi, 29.

<sup>33</sup> Senge, 68.

<sup>34</sup> Garvin, 21.

<sup>35</sup> Halachmi, 30.

<sup>36</sup> Ibid, 31.

<sup>37</sup> Ibid, 34.

<sup>38</sup> Schein, 109.

<sup>39</sup> Schein, 110.

<sup>40</sup> Slator, 67.

<sup>41</sup> Anthes, 77.

<sup>42</sup> Ibid, 76.

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