Defining and Creating Organizational Knowledge Performance

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Abstract

The literature on organizational learning has been described as "volcanic" (Easterby-Smith, Crossan & Nicolini, 2000) because of the persistent volume of studies on the construct, and some refer to it as a core idea in organizational theory (Prange, 1999). Yet, there has been conceptual and definitional confusion (Crossan, Lane & White, 1999; Templeton, Lewis & Snyder, 2002). In this paper, I trace the evolution of the theory of organizational learning to its manifestation in theories of the learning organization and the consequent impact on knowledge performance. The ideas of a learning organization or of organizational learning capability help leaders translate organizational learning into organizational capacities. Finally, the role of informal learning as a strategy to create a learning culture and enhance knowledge performance is explored.

Keywords: learning organizations; knowledge performance; informal learning

Resum. *Definició i creació de l'acompliment de l'aprenentatge organitzatiu*

La literatura sobre l'aprenentatge organitzatiu ha estat descrita com a «volcànica» (Easterby-Smith, Crossan i Nicolini, 2000) pels continus estudis existents sobre el seu constructe i pels que tenen com a tema principal les teories organitzatives (Prange, 1999). No obstant això, existeixen controvèrsies en la definició i conceptualització d'aquest terme (Crossan, Lane i White, 1999; Templeton, Lewis i Snyder, 2002). En aquest article es descriu l'evolució de la teoria de l'aprenentatge organitzatiu en les teories de les organitzacions que aprenen i el seu consegüent impacte en el coneixement. Sens dubte, les bases de l'organització que aprèn o de la capacitat d'aprendre de les organitzacions ajuden els líders a transformar l'aprenentatge organitzatiu en capacitats organitzatives. L'article conclou amb el rol de l'aprenentatge informal entès com a estratègia per crear una cultura d'aprenentatge i per potenciar el coneixement.

Paraules clau: organitzacions que aprenen; coneixement; aprenentatge informal

Resumen. *Definición y creación del desempeño del aprendizaje organizativo*

La literatura sobre el aprendizaje organizativo ha sido descrita como «volcánica» (Easterby-Smith, Crossan y Nicolini, 2000) por los continuos estudios existentes sobre su constructo y por los que tienen como tema principal las teorías organizativas (Prange, 1999). No obstante, existen controversias en su definición y conceptualización (Crossan, Lane y White, 1999; Templeton, Lewis y Snyder, 2002). Al respecto, en este artículo se describe la evolución de la teoría del aprendizaje organizativo en las teorías de las organizaciones que aprenden y su consiguiente impacto en el conocimiento. Sin duda, las bases de la organización que aprende o de la capacidad de aprender de las organizaciones ayudan a los líderes a transformar el aprendizaje organizativo en capacidades organizativas. El artículo concluye con el rol del aprendizaje informal entendido como estrategia para crear una cultura de aprendizaje y para potenciar el conocimiento.

Keywords: organizaciones que aprenden; conocimiento; aprendizaje informal

Summary

How can organizations grow their capacity to learn continuously? How can they change more rapidly to meet the challenges of an uncertain and unpredictable environment? These questions have led scholars to imagine a new breed of organization, a learning organization. Researchers have identified a correlation between the presence of the dimensions of a learning organization and financial and knowledge performance (Watkins & Dirani, 2013). While often described in idealistic, visionary terms, applied scholars have sought to identify the dimensions and behaviors that organizations can adopt to enact the vision of an organization that learns continuously and is agile. When these dimensions are strongly present in an organization, we say they have a learning culture. But how do we create a learning culture? Informal learning is a significant means to that end. In this paper, research and theory building to evolve a theory of organizational learning and its manifestation in theories of the learning organization are offered in order to examine the impact of enhanced capacity to learn on knowledge performance. Finally, the role of informal learning as a strategy to create a learning culture and enhance knowledge performance is explored.

1. What is Organizational Learning?

"Organizational learning" as a concept was first coined by Cyert and March (1963) who used the term to describe the adaptive behavior of an organization. They focused on learning from experience—how the organization adapted to a changing environment and "learned" new ways of operating over time. This contrasts with Argyris and Schön (1978, 1995; Argyris, 1999) who defined organizational learning as a process of detecting errors and correcting them by changing organizational theories in use. This view sees learning as a change of the collective mind of the organization—largely through dialogue and inquiry. A final perspective is offered by Huber (1991), who takes an information processing perspective where the organization learns through acquiring, processing, interpreting, storing, and distributing useful knowledge.

March (1991) differentiated between two kinds of organizational learning from experience. On the one hand, organizations make investments in *exploration*, i.e., in research and development to generate new knowledge. On the other hand, they invest in *exploiting* proven technologies and markets. Thus, organizations learn from experiences of exploration and exploitation. Argyris and Schön's more cognitive view (1978, 1996) blends individual and organizational learning. They defined organizational learning as what happens when individuals, acting as agents of the organization, make meaning of experiences of detecting and correcting errors, adding to the store of wisdom or know-how in the organization.

The literature on organizational learning has been described as "volcanic" (Easterby-Smith, Crossan & Nicolini, 2000) because of the dramatic and persistent volume of studies on the construct, to the point it is now seen as a core concept in organizational theory (Prange, 1999). There has been conceptual and definitional confusion (Crossan, Lane & White, 1999; Templeton, Lewis & Snyder, 2002). Definitions vary between behavioral, information processing, and cognitive learning theories. Most agree it remains "mystifying" and "elusive" and maddeningly difficult to measure (Friedman, Lipschitz & Popper, 2005). When various versions or models of organizational learning have been examined as a potential theory, it is clear they do not meet the requirements of strong theory (Prange, 1999) since they lack consistency, completeness, and utility. Friedman, Lipschitz and Popper (2005) also found conceptual confusion: "By defining *organizational learning* in terms of outcomes (e.g., changes in standard operating procedures), learning processes within an organization are treated as a so-called black box" (p. 22).

Critiquing multiple theories of organizational learning, Prange (1999) found it reasonable to expect a theory of organizational learning to address four questions:

1. What does organizational learning mean? (definition)
2. What is being learned? (content of learning)
3. When does learning take place? (incentives and motives for learning)
4. How does learning take place? (processes of learning) (p. 26)

Prange concluded that "the most general result is that there is a lack of consistency between (and sometimes even within) approaches" (p. 27).

While some argue that these theorists anthropomorphize the organization, acting as if it were an individual learning, they remain mystical about how one moves from the individual to the collective (Friedman, Lipschitz & Popper, 2005). The idea that systems can act in concert as a collective entity is fundamental to studies of organizational culture. A cultural perspective of organizational learning is concerned with what is shared across the organization—its vision, values, history, and memory. Schein (1996) argued that the idea of organizational learning refocuses us on the culture as the primary means of changing the capacity of the organization to grow. Schein argued that in "complex organizations that are systems composed of many sub-systems . . . [the] capacity to maintain itself and grow . . . depends upon . . . shared assumptions" (p. 4) that underlie these systems and live beyond the individuals that populate them. Schein continued, "Culture is both the consequence of the organization's prior experience and learning, and the basis for its continuing capacity to learn" (p. 5). Culture fundamentally influences what organizations do.

Argyris and Schön (1996) also focused on how culture shapes, supports, or inhibits the learning of individuals, groups, and the organization. They differentiate between single- and double-loop learning. Single-loop learning involves a change of strategies or tactics when there is a mismatch between what is intended and what occurs. Double-loop learning requires a deeper analysis of the assumptions, values, or beliefs that cause individuals and organizations to define a situation a particular way. Organizational learning occurs when organizations challenge and transform prior assumptions and beliefs.

Learning in each of these approaches began with a disjunction, a jolt, or a surprise that triggered exploration, reflection, and sometimes transformation. As a community of people, organizations learn through their members. But they can also learn as a system. One of the first empirically-derived formulations of the nature of organizational learning as a system was that by Meyer (1982). Meyer looked at how hospitals with different strategic approaches responded to the unprecedented environmental jolt of a doctor's strike. Meyer theorized that organizations learn by determining what to pay attention to and by interpreting or framing the situation. This framing is shaped by the organization's dominant strategy and ideology. Meyer found two types of organizational learning: *resilience*, or weathering the storm and bouncing back to business as usual (i.e., first order changes), and *retention*, retaining new practices and knowledge generated by adapting to the jolt, a second order change. In his study, strategy and slack constrained and cushioned approaches and predicted first order change. It was vision or ideology and structure that enabled real transformation or second order change. These organization level attributes create the conditions for the organization to learn. What is interesting in this study is how the underlying theory of organizational learning as adapting to experiences is implicit in his two terms (resil-

ience and retention), yet his data reveals the significance of a cultural perspective —the vision or ideology and structure that drive transformational changes. Thus, he empirically validates both the experiential and cultural perspectives of organizational learning.

Understanding learning— who learns, how learning occurs at the collective level, what triggers it, etc. is where organizational behavior theorists begin to falter. The authors argue that for learning to occur at the organizational level, there must be roles, procedures, and functions that enable it to occur. The solution for Friedman, Lipschitz and Popper (2005) to anthropomorphism and rampant skepticism is to focus on organizational learning capabilities such as after action review. This is where the idea of a learning organization comes in. Research on organizational learning capabilities began to operationalize the capacities that emerged in theories of a learning organization.

2. Research on Organizational Learning

Research on organizational learning (OL) has been difficult due to the differing views of the nature of that learning and the resulting confusion in what to measure to study organizational learning. Following one view of OL, for example, we might measure adaptation to environmental changes. Following another, we might observe changes in strategy, vision, and structure. Finally, we could measure the effectiveness of the knowledge management and information processing and retrieval of an organization.

These differences led Templeton, Lewis and Snyder (2002) to develop an alternative definition of organizational learning that they believe synthesizes these disparate perspectives:

> As a result, 78 explicit definitions of OL were discovered and synthesized into the following conceptual definition for this study: Organizational learning is the set of actions (knowledge acquisition, information distribution, information interpretation, and organizational memory) within the organization that intentionally and unintentionally influence positive organizational change. (p. 189)

To build a measure, they had to conceptualize the implied components of their definition. They identified eight factors to measure: awareness, communication, performance assessment, intellectual cultivation, environmental adaptability, social learning, intellectual capital management, and organizational grafting. The difference between the factors and their definition of organizational learning is striking. Despite the more information processing focus of their blended definition, their measure includes cognitive and cultural definitions of organizational learning as well. Measuring such a complex construct demands that scholars incorporate the full range of capacities represented in the social, cognitive, behavioral, and information processing approaches to organizational learning. It may be that each of the earlier theorists focused on one aspect of a whole, and only in attempting to operational-

ize the construct does it become clear that each view is essential to capture the full construct.

In a similar attempt to operationalize organizational learning, Jerez-Gómez, Céspedes-Lorente and Valle-Cabrera (2005) noted that previous efforts to define organizational learning have focused on process outcomes. They note:

> We consider organizational learning to be a latent multidimensional construct inasmuch as its full significance lies beneath the various dimensions that go towards its makeup. Thus, an organization should show a high degree of learning in each and every one of the dimensions defined to be able to state that its learning capability is high. These dimensions, called managerial commitment, systems perspective, openness and experimentation, and knowledge transfer and integration, sum up the aspects mentioned previously as the basic elements needed for an organization to learn, and constitute our organizational learning structure model. (p. 717)

Though this approach is building toward a multi-dimensional model, the elements are too divergent to capture organizational learning as a holistic entity and this framework ignores the inherent inconsistencies among units of analysis (who or what is learning?) and the nature of learning at the organizational level.

While scholars debate the meaning of organization and the nature of learning at this level, practitioners focus on how they can use these ideas to change and improve organizational performance. The idea of creating organizations that learn more effectively began to take hold among both management and organization development scholars. They called these organizations "learning organizations."

3. Bridging to the Learning Organization

That organizations can and do learn is well-documented; indeed, Arie de Geus (2002) argued that organizations must learn to survive. de Geus, credited with coining the term "the learning organization," said "Companies die because their managers focus on the economic activity of producing goods and services, and they forget that their organizations' true nature is that of a community of humans" (p. 3). The idea of the learning organization emerged as an attempt to identify the competencies that enable rapid organizational transformation and evolution. The next section offers a model of a learning organization and findings that connect learning organization dimensions with financial and knowledge performance: the Watkins and Marsick Learning Organization framework. One approach to understanding and assessing whether or not an organization is structured to promote organizational learning is found in the work of Watkins and Marsick (1993, 1996; Marsick & Watkins, 1999, 2003). Watkins and Marsick identified key dimensions essential to creating a learning culture. A learning organization has an enhanced

capacity to learn and change. Organizations structured to promote continuous learning have a culture that provides resources and tools for individual learning; ensures dialogue and inquiry at all ranks; captures suggestions for change; emphasizes team learning and collaboration to promote cross-unit learning; empowers people to enact a collective vision; creates systems to capture and share this learning; makes systemic connections between the organization and its environment, scanning the environment to learn and anticipate future needs; and provides leadership for learning through managers who know how to facilitate the development of their employees and who model learning.

4. Correlations Between Learning Culture and Performance

Knowledge performance captures the innovativeness and future earnings potential of an organization. Watkins and Marsick (1993, 1996, 1997) defined knowledge performance as a measure of the state of knowledge creation and the potential for enhancing innovation capacity in an organization. Their perspective is informed by economist Nuala Beck (1992), who identified leading economic indicators for a knowledge era. Her work assumes that human capital is the most important indicator of future economic health in an organization. She looked for indirect measures such as the percentage of the total workforce of an organization who are knowledge workers, the number of new patent disclosures, overall increases in technology purchased by the organization per year, overall investment in research and development, and customer satisfaction, among others. Her indicators signal investment in the development of products and services that make possible the future productivity of the business. Watkins and Marsick's (1997) survey of a learning organization includes financial and knowledge performance scales and in some instances mission performance (McHargue, 2003). Through these and other studies using hard measures of financial and knowledge performance, a correlation between a learning culture and higher performance has been well established.

Watkins and Marsick developed a diagnostic tool to measure changes in organizational learning practices and culture based on their model, as well as measures of change in organizational financial and knowledge performance. The *Dimensions of the Learning Organization Questionnaire* (DLOQ, Watkins & Marsick, 1997) is a survey composed of 43 items that measure perceptions of organization members on seven dimensions of a learning culture and two measures of organization performance consisting of 12 items. The instrument diagnoses factors that influence the overall adaptiveness of the organization. The DLOQ has been tested and modified through numerous research studies (Yang, Watkins & Marsick, 2004; Watkins & Dirani, 2013). Over seventy studies have now been published reporting results from the DLOQ and over 20,000 people have completed the survey (Watkins & Dirani, 2013).

Published studies have compared dimensions of a learning organization with dimensions of performance including financial, knowledge, and mission

Table 1. Correlations between Learning Organization Dimensions and Performance

Study	Financial Performance	Knowledge Performance	Other Measures
Davis & Daley (2008)	All 7 dimensions correlate with FP; PL highest [.599**]	All 7 dimensions correlate with KP; PL highest [.542**]	Pct sales new products correlates with KP [.199**]
Ellinger, Ellinger, Yang & Howton (2002)	All dimensions correlate with FP; Effect sizes of .246 to .312 so LO dimensions explain 25% of variance in these measures	All dimensions correlate with KP; Effect sizes of .246 to .312 so LO dimensions explain 25% of variance in these measures	ROE, Tobin's q, MVA, Net Income/ Employee-.104 to .108 effect sizes so LO dimensions explain 10% of variance in these measures
Hernandez (2003)	N/A	CL, ES, EP, SC, PL	Knowledge Transfer
Kumar (2005)	R(2) = .336 [CL, DI] .339 [TL] .471 [ES, EP, SC, PL]	R(2) = .180 [CL, DI] .284 [TL] .371 [ES, EP, SC, PL]	
Kumar & Idris (2006)	N/A	ES, PL, TL strongest correlates with KP; these 3 explain 41% of variance in KP	
McHargue (2003)	FP – 26% of variance explained by # of volunteers, debt ratio, SC, PL	KP – 26% of variance explained by # of volunteers, net assets, SC, CL	Mission Performance –16% of variance explained by # of volunteers, net assets, savings ratio, TL, CL
Rose, Salleh & Kumar (2006)	FP – 53% of variance explained by TL, SC, PL	KP – 59% of variance explained by PL, ES, DI	
Watkins, Milton & Kurz (2009)	ES – [correlates .589 with FP] EP [.625 – FP] SC [.655 – FP] PL [.629 – FP]	ES – [correlates .676 with KP] EP [.691 – KP] SC [.689 – KP] PL [.660 – KP]	ES – correlates .662 with Mission Performance SC [.631 – MP] PL [.613 – MP]
Wetherington & Daniels (2013)	All 7 dimensions correlate with performance; PL highest correlation	All 7 dimensions correlate with performance; PL highest correlation	
Yang, Watkins & Marsick (2004)	SEM: PL only variable with a direct effect on FP [.42]	SC direct effect on KP [.35] – ES indirectly affects FP through its effect on SC which effects KP; KP & FP correlated with FP having a stronger effect on KP [.54 vs. .36]	

Note. FP = Financial performance; KP = Knowledge performance; CL = Create continuous learning opportunities; DI = Promote dialogue and inquiry; TL = Encourage collaboration and team learning; ES = Establish systems to capture and share learning; EP = Empower people towards a collective vision; SC = Make systemic connections between the organization and its environment; PL = Provide strategic leadership for learning

Source: author's elaboration.

performance, and other organizational effectiveness variables including knowledge transfer, innovativeness, organizational trust, and creativity. The direction of the relationship is consistently positive, with Watkins and Marsick's seven dimensions correlating with higher performance and organizational effectiveness. In fact, a meta-analysis across all of these studies shows that across languages, cultures, and types of organizations, these dimensions are reliable and correlate with both soft and hard measures of performance (Watkins & Dirani, 2013). Table 1 summarizes results from several studies of the relationship between the DLOQ dimensions and performance. Studies were selected based on whether or not organizational performance variables were included with the DLOQ and the study specifically compared these variables with the learning organization dimensions.

Correlations between dimensions of a learning culture and performance such as those shown in Table 1 help leaders see the impact of a continuous learning infrastructure on organizational performance. These studies demonstrate the relationship between *leaders providing strategic leadership for learning* and an effective learning organization. Equally interesting is that *making systemic connections between the organization and its environment*, as Senge (1990) originally advocated, is indeed strongly correlated with organizational performance. Knowledge management or *embedding systems to capture and share learning* is significant to enhancing knowledge performance. Yet, all of the DLOQ dimensions correlate with performance—thus there is a need to attend to each of these learning dimensions to achieve the desired outcomes. We hypothesize that it is the gestalt of these dimensions that define a learning culture. How do we enact these dimensions? Where does one start to create a learning culture? One area that can significantly affect the overall level of learning in an organization is to promote informal learning as a critical facet of the overall learning infrastructure of the organization.

5. Building the Learning Architecture of the Organization

The role of informal learning in fostering a learning culture cannot be overstated. A culture of learning cannot be created with a training session, but occurs in the "karma in the walls and halls" (Marsick, Watkins, Callahan & Volpe, 2009), in the daily interactions between individuals at work, between leaders and followers. Informal learning consists of all the nonclassroom-based learning activities individuals engage in to acquire the knowledge they need to do their work. As such, this learning is ubiquitous. But what is the nature of informal learning in the workplace?

Informal learning definitions share many commonalties. They differ in terms of whether the learning arises from the nature and context of work itself, or from who drives the learning: the learners, outside experts, or representatives of organizations. Fuller, Ashton, Felstead, Unwin, Walters and Quinn (2003) said:

> The term informal . . . draws attention to the workplace as a site for learning in which people learn both with and without structured and specialist support . . . . learning is not the primary goal of the workplace but a by-product of workplace activity in general. (p. 5)

Similarly, Marsick and Watkins (1990, 2014) and Marsick, Watkins, Callahan and Volpe (2009) defined informal learning as learning through experience "outside of formally structured, institutionally sponsored, classroom-based activities". . . . Incidental learning is "a byproduct of some other activity, such as task accomplishment, interpersonal interactions, sensing the organizational culture, or trial-and-error experimentation" (pp. 6-7). Finally, Livingstone (2001) defined informal learning as "any activity involving the pursuit of understanding, knowledge or skill which occurs without the presence of externally imposed curricular criteria" (p. 4). By any of these definitions, the pervasiveness of informal learning is apparent.

6. Informal and Incidental Learning

Marsick and Watkins' (1990) model of informal and incidental learning focuses on learning through problem solving. It integrates the cognitive perspectives of Argyris and Schön (1996), proposing that learning in informal, less structured settings proceeds through phases of framing the workplace context in which the learning occurs, interpreting the triggering experience, identifying solutions, learning how to implement them, and assessing outcomes once implemented. Figure 1 depicts Marsick and Watkins' conception of informal and incidental learning as adapted in Marsick, Nicolaides and Watkins (2014).

Marsick, Watkins, Callahan and Volpe (2009) argued that effective human resource development practice demands that practitioners frame their task as building a learning architecture with formal, informal, and incidental learning opportunities available to individuals in the organization. Strategies to implement informal and incidental learning have been described by Bersin (2009) as informal/on-demand, social, or embedded. Perrin and Marsick (2012) saw a continuum of informal-to-incidental learning options encompassing a range of activities that might be developed as part of a learning infrastructure. In these frameworks, the organization is asked to conceptualize learning more broadly than simply training courses provided face-to-face and on-line and to include more informal strategies of mentoring, coaching, job shadowing, job rotations, challenging assignments, and other experiential alternatives. Formal training can build continuous learning capabilities and be better linked to informal learning opportunities on the job, Human resource developers can build learners' capabilities as self-directed learners and help the organization develop a healthy climate that stimulates the learning intensity of jobs (Skule, 2004), provide resources for self-directed learning (Lohman, 2009), and develop managers as role models and facilitators for learning (Ellinger, 2005). Increasingly,

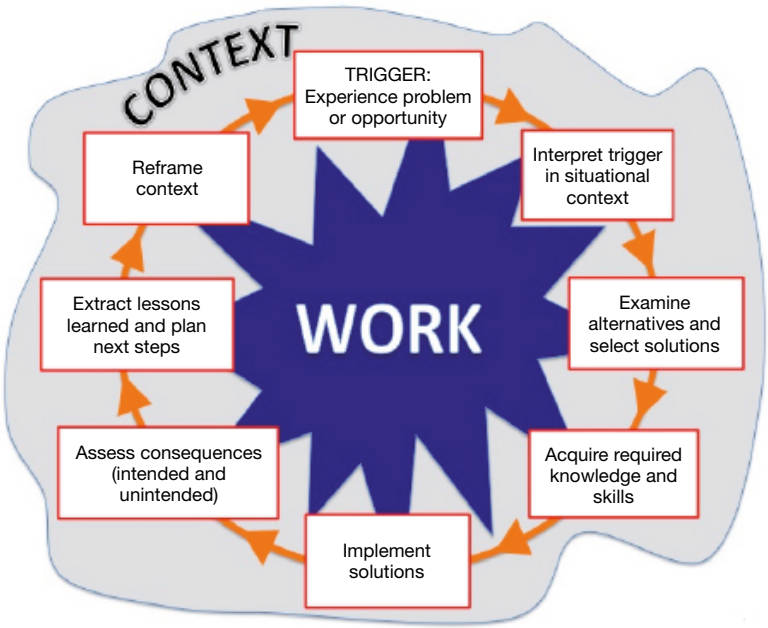

Figure 1. Informal and Incidental Learning Model.

Source: reprinted from Marsick, Nicolaides & Watkins (2014: 16).

calls for credentialing informal workplace learning and systems to certify competencies acquired through this learning are blurring the lines between informal and formal learning (Watkins, Marsick & Fernández de Álava, 2014; Conde, García-Peñalvo, Rodríguez-Conde, Alier & García-Holgado, 2014; García-Peñalvo, 2013; García-Peñalvo, Colomo-Palacios & Lytras, 2012).

A recent study by Nurmala (2014) found a strong correlation between a learning culture and access to and participation in informal and incidental learning opportunities. She found that:

— Having formal learning opportunities available in the organization correlates with all but two dimensions of a learning organization [not *dialogue & inquiry* nor *embedded systems to capture and share learning*].
— Having informal and incidental learning opportunities available in the organization correlates with all dimensions of a learning organization.
— Participating in formal learning *does not* correlate with learning organization dimensions.
— Participating in informal and incidental learning correlates highly with all learning organization dimensions. (p. 80)

These informal learning efforts enable the learning function to move to an organization development function. When we build a learning architecture of learning approaches that work at individual, group, and organizational levels that also span formal to informal strategies, the organization is impacted. When leaders become facilitators and coaches of others' learning, it changes the nature of leadership in the organization. Knowledge captured becomes a learning resource and a way to disseminate change. Informal learning strategies, such as action learning groups and communities of practice, promote both short- and long-term learning, leaving leaders and professionals wiser, and organizations with more effective people and more effective strategies to solve problems, not to mention the new programs, processes, and products generated in the action learning process itself.

Watkins and Golembiewski (1995) believe we need to shift to organization development as a tool that must be transferred to many members of the organization, rather than the sole province of experts. When we build a learning architecture that spans formal, informal, and incidental learning strategies, we are also placing a large part of the responsibility for designing learning in the hands of the learners themselves. Informal and incidental learning is not just about organizations expecting people to learn on their own, but it is also about giving them the tools experts have traditionally held to themselves. This is the learning equivalent of the trend toward a democratization of knowledge. Design architecture, especially option rich modular design architecture (Baldwin & Clark, 2005), leads to enhanced innovation by users—putting the tools of design in the hands of everyone. This is a fundamental shift in thinking about who controls the processes of innovation. Baldwin and Clark (2005) believe it is the modularity of the design architecture that permits collaborative knowledge creation with little specialized expertise since expertise is chunked into easily understood parts or modules and these modules can be designed to permit almost infinite options. Marsick, Watkins and Boswell (2013) noted that these toolkit designs actually blend formal and informal learning and offer the possibility of creating a learning community of users. At the same time, they level the playing field, giving novices and experts the same tools with which to design learning.

Informal learning can be a major part of the learning architecture of an organization. By supporting informal learning, organizations enable learning to be truly continuous, strategically targeted to the current problem or need, and empower the very creativity needed to build future capacity. Whether this learning is self-directed individual learning, group learning through communities of practice, action learning or similar strategies, or organizational learning through changing the organization's mental models and culture to enable shared meaning making and collective action, the organization, by loosening control, gains a kind of learning that is only limited by the time and capacities of those engaged in it.

7. Conclusion

Ashby's Law of Requisite Variety (Ashby, 1956) states that variety absorbs variety; thus we must match the complexity we find in the environment with the complexity of our responses. Perhaps every age has conceived of itself as infinitely complex, but there is little doubt many organizations today have morphed into massive global structures that yet hang by a slender thread of financial viability. Prange (1999) proposed that organizational learning and the learning organization are more prevalent in organizational literature today because:

> Organizations are reeling from discontinuities created by a growing level of globalization, heightened volatility, hyper-competition, demographic changes, and the explosion of knowledge. Ever faster means of communication alter today's business climate and it is becoming more evident every day that we cannot anticipate the environment of tomorrow. (p. 23)

Without learning that keeps pace with the rate of change (Revans, 1980), organizations will not be able to compete. A culture of continuous learning at individual, group, and organizational levels permits the complexity and variety of responses that match our current environment.

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