

# Learning and Transferring Knowledge in and between Organizational Projects

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*In the attempts to achieve competitive advantage and maximize the value of resources, organizations engage in a diversity of activities which produce information and knowledge relevant for subsequent or future activities. Though knowledge is essential, what is critical to organizations is ‘making sense’ out of it; the ability to learn and make knowledge acquired in present organizational activities available and accessible for future activities. This ability to transfer the relevant knowledge in and between organizational projects is a major challenge. There tends to be more focus on learning from project outcomes than during the project. However, the latter offers the opportunity of maximizing the project success. This is what this paper is about - to delineate a road map for learning and knowledge transfer in organizations using organizational projects as a key trigger. The paper draws on the theory of meaning structures to explain how learning occurs at the individual level as an employee and at the organizational level as a collective. The proposed conceptual framework identifies specific factors which facilitate learning during four key phases in organizational projects – problem definition, requirement analysis, development and implementation. This conceptual framework is the starting point for future empirical research in knowledge transfer in organizational projects.*

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## INTRODUCTION

*“If your mind is empty, it is always ready for anything; it is open to everything.  
In the beginner’s mind there are many possibilities; in the expert’s mind there are few”.*  
- Suzuki Roshi cited in Chawla (1995: 1)

In recent years while the traditional three factors of production; land, labour, and capital, have become relatively easier to handle, a fourth, knowledge, though not new, is increasingly becoming prominent and gaining much emphasis (Kluge et al., 2001). Knowledge is at the heart of today’s global economy and hence an important competitive advantage for any organization (Gunnlaugsdottir, 2003). Thus Francis Bacon’s assertion, "knowledge is power", tends to be more of a reality done just a statement (Liao, 2003).

However, though knowledge is essential, what is critical to organizations is ‘making sense’ out of it; the ability to learn and make knowledge acquired in present organizational activities available and accessible for future activities (Jacques, 2000: 208). Learning has become as important as knowledge; “now, the quality of inquiry and questions are valued as much as arriving at a sound theory” (Chawla, 1995). Unfortunately, for the majority the concept of learning has been based on the premises that, there is a right answer, which is known by another; usually an expert that we want to thoroughly acquire (Dixon, 1994: 1-2). While this is not false, it is limited especially in the context of finding answers to problems in organizations which have never been experienced or in which previous answers show no promise. Thus, knowledge, the seeming right answer, is ephemeral; constantly needing to be challenged, revised and

updated to remain relevant to organizational activities and functions which are fairly less static in reality. The focus, consequently, moves from the product onto the process, hence, we ask that how can we learn effectively?

To this question, Suzuki Roshi gives as answer in the quote above. We can only learn, when we open up, share what we know and alienate ourselves from that to consider what others know (Dixon, 1994). In relation, Huber (1989) adds that, organizations learn when any of its components have acquired information and have this information available for use, either by other components or by itself, on behalf of the organizations. Thus in both scenarios whether individually or collectively as an organization, what is stressed is the accessibility of what is known to others for usage. The possibilities of effective learning lie in bringing all this information to bear and to contribute to the definition of solutions. It is through this accessibility and action that the power of knowledge is harnessed to solve organizational problems, transfer knowledge, and initiate new situations for the present and future (Liao, 2003).

In seeking to improve organizational tasks through organizational learning (OL), organizational projects can be viewed as a critical area. For most organizations, the ability to transfer the relevant knowledge in and between organizational projects is a major challenge. There tends to be more focus on learning from project outcomes than during the project. Most often than not, project teams are in a hurry to sign off projects than in sharing and documenting the knowledge gained. Hence, instituting processes to learn and transfer knowledge during the project offers the opportunity of maximizing the project success, while making knowledge available for future projects. The question, is how can organizations institute the requisite processes to achieve this?

This paper attempts to address the question – *how can organizations transfer knowledge in and between organizational projects?* The paper is structured in four sections. The first part is the introduction. The second part explores organizational learning using the theory of meaning structures as a theoretical lens. The third part examines learning during organizational projects through four phases of activities and develops a conceptual framework. The fourth section presents the implications of the framework and the concluding thoughts on the paper.

## **KNOWLEDGE AND LEARNING IN ORGANIZATIONS**

In seeking to understand the concept of knowledge and learning the first question that needs to be answered is, *what is knowledge?*

Several definitions and taxonomies of knowledge have been put forward through research studies and books (Polanyi, 1958; Dixon, 2000; Gunnlaugsdottir, 2003). Evident from these, Newell et al. (2002), rightly notes that, knowledge is an intrinsically ambiguous and equivocal term. As such, a useful starting point in understanding this term is to draw the distinction between information and knowledge. Gunnlaugsdottir (2003) explains that, facts without context are called “data”, however, when these data are organized, analyzed and interpreted to acquire a meaning, information is obtained. On the other hand, information only becomes knowledge when it is put into a logical and understandable context which we can verify and recall from our experience. In effect, knowledge can be then be considered as information with defined actions in a specific context or the “meaningful links people make in their minds between information and its application in action in a specific setting” (Dixon, 2000: 13).

Now if knowledge is generated as we use our minds to draw meaningful links from information and define actions in a specific setting, then how does learning then occur? In answer to this, Ackoff and Emery (1972) explain that, “the basis of learning is inquiry; questions are posed with the express goal of obtaining information and accruing it until inquiry is satisfied”. This presupposes that learning is then the process of acquiring knowledge (Cook and Yanow, 1993). Further, it can be inferred that for learning to occur or when learning occurs; there is a learning product or what has been learnt, being knowledge; a

learning process which consists of acquiring, processing and storing information; and a learner to whom the learning process is attributed (Argyris and Schon, 1996: 3). Thus, with an individual being the learner, individual knowledge then occurs out of an individual learning process, and subsequently, collective knowledge is generated out of an organization learning process with the organization; a collection of individuals, being the learner. If learning is a process, what then does this process entail in respect to the learner?

To explain how learning occurs, we will draw on the theory of meaning structures (Dixon, 1994). Regarding individual learning, there are three ways individuals come know something: first, through the verbal transmission of information - ideas voiced by others, books, reports, et cetera; second, direct experience; the receipt of sensory data such as color, sound and pain; and third, by reorganizing what we already know into a new configuration thereby creating new knowledge (Dixon, 1994: 12). Thus, through human observation and analysis, an individual creates “meaning structures” from the data encountered or obtained from interacting with the world. Meaning structures refers to the meaningful links or interpretations we draw from our sensory impressions, which is influenced by numerous factors, including the context in which it is seen and the meaning structures we have created from the past and the genetic factors (McClellan, 1983; Dixon, 1994: 14). Actually, they guide us to organize data to make sense out of it. Consequently, individual learning is about giving meaning to the outcomes of our own interactions or encounters with the world. Polanyi (1958) provides a good example noting that a child may feel hungry but not know that it is hunger until he is offered food or actually eats food.

Regarding organizational learning, organizations are essentially a collection of individuals who if left unattended will pursue largely individual goals (Chourides et al., 2003). Thus within an organization there should exist mechanisms which create and connect relationships between individuals to work collectively for common organization goals. Critical to these mechanisms are those which result in sharing information and knowledge for the greater good; thus creating accessible knowledge. Accessible knowledge occurs when organizational members share what they know with each other, however, several reasons do exist for individuals to retain as private what they know. Those parts which individuals choose to withhold from other members is what theory refers to as *private meaning structures*; and those that they are willing to make available to others in the organization are referred to as *accessible meaning structures*. Further, there also exist those which organizational members hold jointly with other members of the organization referred to as *collective meaning structures* (Dixon, 1994: 36).

Collective meaning structures do envelope the set of norms, strategies, and assumptions which specify organizational processes and tasks, how they are divided and performed. They allow organizations to act automatically, swiftly and in concert with minimal lengthy discussions on why certain things are done certain ways. On the other hand, collective meaning structures can also have negative impact on the organization, as they are largely tacit. Considering today’s rapid changing world, meaning structures could become obsolete or lose their value with time. However, collective meanings held as *truth* and *unquestionable* makes the introduction of new ideas that conflict with them difficult to implement. They can only be available to change in novel situations or when discrepancies occur to produce organizational decline or project failures. Even in such situations, organizational members have to create conscious awareness for change in the tacit collective meaning, making it accessible to be questioned.

Our perspective on organizational learning is about, first, making the private meaning of organizational members more accessible so that they can influence other members; and second, making collective meaning structures more accessible so that they can be tested and altered. To achieve this, Dixon (1994: 44) proposes an organizational learning cycle which involves four steps starting with (1) *generate*; the widespread generation of information, (2) *integrate*; integrates the new information into the organizational context, (3) *interpret*; collectively interpreting the information and (4) *act*; authorizing organizational members to take responsible action based on the interpreted meaning. The cycle enables

the organization to create, acquire and transfer knowledge, and most essentially modify its behavior to reflect new knowledge and meaning. However, collective learning is lost when all these steps are disconnected; when different parts of the organization conduct each step. Additionally, it is also not sufficient to concentrate on only some steps of the cycle, because any one without the others is ineffective; without accurate information, the learning would be ineffective. We will now apply theory of meaning structures to explore how organizations can learn during organizational projects.

### **LEARNING DURING THE ORGANIZATIONAL PROJECTS**

Organizational projects consist of a set of activities or tasks and resources deployed to achieve defined objectives and/or towards defined goals. The tasks within these phases may differ depending on the project. For the purposes of this discussion, we consider the introduction of a new technology to support organizational functions as a project. We summarize these tasks in technology development in organizations in four phases namely: *problem definition* (initiation), *requirement analysis* (planning), *development* (executing), and *implementation* (installing, training, evaluation and signing off) (Boateng and Hinson, 2008). Within an organization, these tasks are usually undertaken by a project team consisting of technology professionals – analyzing, developing, and implementing the technology; and users – communicating requirements, guiding specification, development and “signing off” the final technology. In addition, the services of external consultants may be engaged. Key stakeholders, whilst not direct members of the project team, have significant influence on the project, namely:

- the financier – providing financial resources for the project;
- the champion or key advocate – opinion leader who can advocate for the project; and
- the project owner – the final authority in respect to the use of the technology.

The phases of the technology development process thus serve as a guide for these project participants to carry out the project.

### **PROBLEM DEFINITION**

Problem definition starts with the awareness of the need for a new technology, which may originate from the need to provide a solution to a specific problem, to respond to pressure, or to exploit an opportunity. From this realization of need, a broad statement of objectives of the new technology is defined. A feasibility study is also undertaken to evaluate the project viability and examine alternative solutions.

In achieving these tasks, the project team may consult intended primary/end users, examine organizational processes, evaluate industry reports and contact consultants and technology vendors to determine the possible solutions. As such, two knowledge sources, external and internal, can be identified. The sources of external knowledge are diverse, including published reports, Internet sources, commercial databases, and the knowledge possessed by vendors and consultants, while sources of internal knowledge range from informal communications among individuals to formal analyzes of experience and objective audits of current organizational functions which the technology is intended to support.

As Friedlander (1984) says, “organizational learning occurs at interfaces between persons, between organizational units, and between the organization and its external environment”. Thus, in order to facilitate learning, the interaction of these diverse knowledge sources is needed to question assumptions and to assist the collective interpretation of the perceived benefits and impact of the new technology. These assumptions and perceptions may exist as private and collective meaning structures, and through mechanisms which facilitate interaction these meanings become accessible. However, all external sources of knowledge including consultants should be objectively utilized, verified, and managed within organizational interests and project objectives (Boateng and Hinson, 2008). The contribution of knowledge became only beneficial, when organizations know *what kind of knowledge it needs, when it needs the knowledge and how to apply the knowledge*.

### **ANALYSIS**

The project then moves to an analysis or planning stage, which purports to be a thorough investigation of the current technology and defining the requirements and specifications for the new technology to support organizational functions. These facts are gained by interviewing both management and operational staff, through the use of questionnaires, by direct observation or experience, and searching organizational reports. A set of requirements of *what* the new technology will do; performance standards, social and technical requirements, are then developed.

This presupposes that critical to this phase is the knowledge of end/intended users and effective interpretation of their requirements by the project team. Considering private meaning structures, individuals retain what they know in order to respect information that has been given in confidence, or in recognition that certain information could increase or threaten their social status. Under certain circumstances individuals may be willing to make their meaning accessible but not under others, and further on, may be selective to who has access to it and when; for example the same person who may withhold some meaning from his superiors may be willing to share it with his fellow colleagues. Thus the same meaning may be sometimes private and sometimes accessible, which makes the boundary between accessible and private meaning structures gradual and flexible. Achieving accurate and complete interpretation requires the consideration of user interests and values, those which conflict and those in concert, and making amicable resolutions which largely meets the interests of all parties affected.

Diagrammatic models and techniques may further be used to communicate concepts and simulate information about the old and new technology to ensure that the project team and the intended users of the technology are in agreement. Hence, the prior meaning structures of the project team significantly shape their ability to construct accurate and complete meaning from their interaction with end/intended users.

#### **DEVELOPMENT**

The development phase involves the development of a working technology from the requirements. However, depending on the decision made at the feasibility stage, the organization may either decide to acquire the technology by purchasing an “off the shelf” package from a vendor, or develop it “from scratch” by the in-house technology/manufacturing department. The choice of development may determine the extent of knowledge drawn into the project internally and externally throughout the stages of this phase. However, collective interpretation and joint action is critical to maintain focus on requirements, avoid “favourable” propositions from vendor and develop a shared view on the usability of the selected or developed solution. Furthermore, participation of users in testing and documentation of the technology would clarify misconceptions for changes to be incorporated before implementation.

#### **IMPLEMENTATION**

The implementation phase begins with technology implementation involving various issues, such as processes; redesigning processes to accommodate the new technology, and human; educating and training of users and in some cases hiring of new personnel, - necessary to facilitate a smooth transition from the old to the new technology. Training would include installation, usability, establishing monitoring and control measures; and be delivered by the project team, and/or by the vendor if the technology is purchased. Training is critical to facilitate the collective and individual knowledge of the functions and responsibilities involved in using the new technology. Finally, final evaluation or review occurs after the technology has been signed off as suitable for users. It involves reviewing the project and recording and acting on post-implementation problems with the technology.

In summary, we identify specific factors which can facilitate *a collectively shared view, awareness and understanding* of the problem context, consensus on selected/developed solution, and *a joint commitment to action* within the various stages of the technology development process, thereby facilitating learning and the transfer of knowledge into subsequent projects. The factors are outlined in the conceptual framework for learning during organizational projects (Figure 1).

**Figure 1 Conceptual Framework for Knowledge Transfer in Organizational Projects**

| <b>Factors to Facilitate Learning in Organizational Projects</b>   |   |
|--|---|
| <p><b>Problem Definition</b><br/>                     - Initiation<br/>                     - Feasibility</p>  | <p>Widespread <i>generation</i> of information from external and internal sources.<br/> <i>Integration</i> of information into the organizational context to develop a wider perspective of information received.<br/> <i>Collective interpretation</i> of the perceived benefits and impact of the new technology.<br/> <i>Joint action</i> (all relevant management levels) to undertake the project.</p> |
| <p><b>Requirement Analysis - Planning</b></p>  | <p>Widespread generation of information from internal sources.<br/>                     Effective interpretation of requirements and concerns to construct accurate, complete collective meaning between users and project team.</p>  |
| <p><b>Development</b><br/>                     - Executing</p>   | <p>Collective <i>interpretation</i> of usability of selected or proposed technology is critical to maintain focus on requirements.<br/> <i>Joint action</i> of project team and users in building and testing to evaluate their meanings, clarify misconceptions and develop knowledge for maintenance.</p>   |
| <p><b>Implementation</b><br/>                     - Installing &amp; Training<br/>                     - Monitoring &amp; Control<br/>                     - Evaluation<br/>                     - Signing Off</p> | <p><i>Integrating</i> knowledge of the functions and responsibilities involved in using the new technology into the organization.<br/> <i>Collectively interpreting</i> the project outcome, the knowledge gained and defining <i>actions</i> for future projects.</p>  |

**CONCLUSIONS AND IMPLICATIONS**

Arguably, the final evaluation or review stage within the implementation phase of the organizational is proposed to serve as an opportunity for organizational learning since knowledge gained from lessons drawn from review can be valuable for future projects. However, individuals as human beings make systematic errors when recalling information from history, and moreover, the project team may be tired and be in hurry to just sign off the project. Much knowledge may therefore be lost. The end of each phase rather provides results which can also be tested against the initial objectives, and in this way the progress towards the goal can be monitored.

Learning during the process has the potential of generating more knowledge for the future, whilst maximizing the potential for the success of the organizational projects, though it has cost implications on time and resources. It can be therefore be inferred that, within organizational projects, organizations can learn from experience in two ways; evaluation of the individual phases and evaluation of the project outcome as a whole. We do recommend that, organizations seek to learn during the organizational projects process as well as learning from the project outcome.

Then again, the framework emphasizes the essence of making knowledge accessible through the sharing and questioning of meaning structures of the project at all levels of the organization. Hence, it places the organizational project in the wider organizational context, facilitating *a collective view and understanding* of its content as well as its context, and *a joint commitment to action* throughout the project tasks and activities, thereby generating knowledge for subsequent projects. However, these knowledge sharing factors will only thrive in an organizational culture which supports *open empowered teamwork*. Hope and Hope (1997) note that, to maximize the productivity of knowledge, bonds of trust need to be created between all constituents. Thus, the seeming challenge for organizations is how to continuously bring the entire organization’s knowledge to bear whiles creating the corresponding supportive culture. Second, we do recommend that organizations to change to a culture which focuses on the collective interaction and

teamwork. Such culture facilitates continuous learning. These are may be achieved by developing or creating multi-functioning and multi-skilling workshop exercises in which employees are mixed and grouped together in simulation projects; playing games, using Legos and jigsaw puzzles, all with meaning to understand the whole processes and tasks of other employees.

Though the factors in our conceptual framework may not apply to all organizational projects, or may be more relevant to technology development projects, they are a *starting point for future empirical research in knowledge transfer in organizational projects*. Future research may examine these factors across different organizational projects to gain empirical evidence to strengthen the internal validity or redefine the factors. Another avenue for research is to examine how the resource challenges of firms in developing countries influence knowledge transfer in organizational projects.

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