

## **Knowledge Transfer in a Learning Organization, Modeling Innovative Mental Models**

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### **Abstract**

This study introduces a new model in knowledge transfer (KT). In order to compete in a global economy, organizations will need discipline and KT processes to examine recently created or purchased data, so that they can make the most of investment and product return. The KT process as standard protocol sifts and guides new data, seeing it through its emerging stages until it advances to become a product for profit. This model proposes a process, incubated in an organization that has adopted an innovative mental model, thus developing a routine method to drive the inventive environment. In the fast paced dynamic of the global knowledge transfer market, organizations need to invest in establishing a flexible, systematic mindset to effectively manage the knowledge transfer process. When systems thinking is combined with an orientation towards learning, knowledge transfer will produce a high return of investment for the long term.

## **1. Knowledge Transfer and Innovation**

*The innovation point is the pivotal moment when talented and motivated people seek the opportunity to act on their ideas and dreams. -W. Arthur Porter*

Disruption and innovation: these expressions happen daily in entrepreneurial organizations. In the high tech sector, such as in Silicon Valley and so many industries today, innovation is not a fad, it's a means for survival. Resourceful competitors reveal the importance of key factors: transferring knowledge in the simplest way, and having a mind for inventive collaboration and action. Entrepreneurial businesses understand the value of their knowledge networks, bringing different information and experience sources together to transfer knowledge and innovate. But the challenge is to continually promote an innovative set of behaviors, a mental model, alongside knowledge transfer, until both become second nature. If innovative mental models are in place, they serve the organization's need for knowledge creation and extension into products, which serves a competitive global economy.

## **2. Knowledge Development Model**

All organizations, both private and public sector, have a complexity problem. They must build processes that are agile and can respond quickly; they must have the vision to predict reverberations in their market and then maximize the strength of their knowledge networks. Individuals and organizations are on data and information overload these days (Sarka, 2014). This overload requires corporations to invest time and money in developing strategies to build a system that can transfer knowledge in the most effective fashion. The key is to keep track of historical achievements, without being constrained by them. Accordingly, it is essential to be aware of obstacles that might interfere with developing a successful knowledge transfer system, as well as ways to manage the overall knowledge.

The organization must have a well-documented protocol and model that drives knowledge transfer development. This model assimilates knowledge into the organization's culture and existing product or industry strengths. The organization will go through many natural phases to consider an improvement or new product. Any new creation has to start with the right ingredients. Trott (2008) suggests that information is fundamental to the operation of an

organization and is the stimulus for knowledge, know-how, skills, and expertise. It is only when organizations use this information that it becomes tract knowledge.

### 3. Knowledge Transfer

The first step of finding a new product or an improvement may start with purchasing raw data, or with conducting actual research to collect raw data. Many organizations today use specialized exploratory research institutions. Some institutions sponsor research, to benefit from the outcomes produced. Once the research has been completed, the raw and/or random data need evaluation. It could be scrutinized in many ways: sorting into categories, matching of similar components, looking for patterns, or classifying to find related themes. Once the data is classified, it becomes recognizable and may fall naturally into different arenas—and now it is information. Eventually the information will evolve to raw knowledge—something realized in a more concrete concept. According to Ajmal & Koskinen (2008), knowledge can be explained as unprocessed raw facts and information that involves the use of a person’s perception, skills, and experience that is processed into knowledge. At this stage, the raw knowledge must be related to individual insights or specifications to change into uniformed knowledge. The natural progression in fitting uniformed knowledge to many settings, needs, or potential applications will make it a technology, suited to the pressing priorities. Eventually, as it is sifted through the organization’s subjective vision, strategies, and market needs, the technology will become a product, aimed to produce revenue. (Figure 1.)

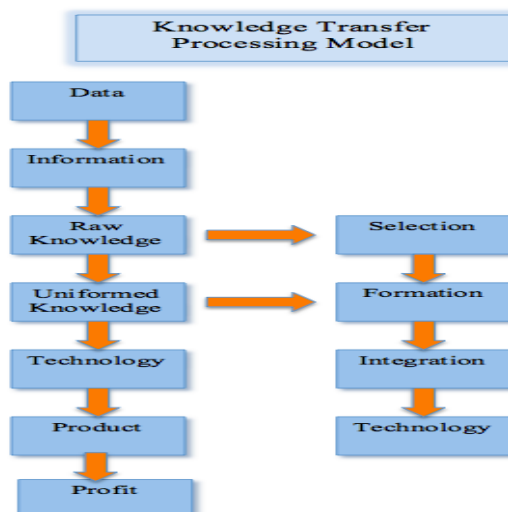


Figure 1.

During knowledge transfer, uncertainties may arise. The organization must be flexible and have had experience in facing the stress of knowledge transfer challenges. Perhaps the most difficult challenge is the selection of which data or knowledge the company wants to transfer. There may be many struggles: which knowledge should be used? Why, where, and how will the knowledge be applied and transformed into a profitable product? Another challenge is processing the knowledge: once the raw knowledge is selected for use, it must be processed and shaped into what the corporation will need to achieve its goals. And the organization must integrate this uniformed knowledge to see that it is adopted. What good is newly uniformed knowledge if a corporation lacks the ability to integrate and use it for its greater good? The test is to be able to convert the data into technology so that the end result will be moving the technology into a product for profit. Ford, Mortara & Probeert (2012), suggest that when establishing or improving a knowledge transfer system, the organization must remember its desired outcome and ultimate goal. This is especially true when corporations integrate Research and Development (R&D) that is foreign, or not created within the company. The organization must accept and adapt to this foreign agent (raw data or even raw knowledge) and use its knowledge networks to shape and develop it.

#### **4. Computer Models**

Sometimes the organization may refine knowledge by using computer software programs. There are algorithms or software calculations that can refine the information or knowledge. Additionally, other computer tools exist to evaluate probabilities of success. Some calculations examine duplications, or can re-factor information to eliminate duplication. Sometimes information may resemble duplication, however, and it really is not. Nonetheless, the computer assessment can only go so far.

The refining process is tricky, and an organization may not have the kind of mathematics to apply to a particular stream of knowledge. In conjunction with the heritage of their product line, it may be that the company is simply looking at the probabilities of moving in one direction

or another. The software can evaluate there are risks – cost and otherwise. But at some point the analysis will need to move from statistical calculations to human reasoning, hunches, or collective intuition, when a computer can't help any more. (R. Riehle, personal communication, September 2, 2015)

### **5. Developing a Mental Model**

Organizations may rely on formal systems to catalog and record its valuable information and knowledge. However individuals and teams—networks of people with experience and critical know-how—are the bedrock of ongoing assimilation and knowledge communication for new ideas, thoughts, platforms, or improvements. Leadership, internally, must model and show support towards ongoing improvement. Externally, the global economy, widespread competition and rapid technological change will do their part to force organizations in adopting and adapting to new trends and needs. Adopting and adapting implies an attitude of continuous learning, or a learning organization. Senge, (2005) describes a Learning Organization as one that aims to accelerate their innovation potential. Their desire is to combine adaptive learning with “generative learning,” that is, learning which gives the organization an ability to create its future (p 14.) He further describes a learning organization as a group of individuals aware of what they want to do, concentrating on their collective behavior and roles, within a greater system. The knowledge transfer process goes hand in hand with the goal to continually improve. This is only accomplished with a combination of environment, culture and expectations for behavior, articulated or not. Even though the organization says its environment promotes creativity and process improvements, it many not produce results. If learning is valued, an organization and its people will be determined to articulate and reward the behavior that produces results and favorable outcomes, throughout its processes. But the best learning takes place when everyone's wisdom, reasoning and experience are valued at all levels, in all decisions.

Externally, the global economy, with its shifting sands and great competitive threat, represents constant pressure for companies to act in a holistic manner. Beyond simply switching hats, the best knowledge transfer processes include the big picture to view any decision: markets, global environments, trends, vision, strategy and the like. This process, which Senge (2005) calls

systems thinking, encourages solutions that consider the many forces at work for the company; it opens up the horizon for multiple influences to improve vision and creativity.

Within any system, there will be established scaffolds for operating. The environment of the organization is built on a framework of policies, formal departments and networks, using established standards of practice. From there, the formal networks will evolve into casual alliances as well with informal practices: a culture will emerge. The organization should encourage questioning of the status quo. As a result, the framework of the company supports continual growth towards success (Wilhelm, 2006.) The culture of the organization will be built on attitudes, values, inter-dependence and long-term patterns of achievements, formed through hard work and trust. Ajmal & Koskinen (2008) describes an organizational culture as comprised of shared practices, values, symbols and assumptions that shape behavior. Culture is an important factor, but the organizational culture may not be enough to foster continual improvement. In fact, the environment and culture are intertwined, and may be mistakenly seen as synonymous; the two build on each other as the organizational climate emerges. After some time, quality improvements throughout the knowledge transfer process are framed by the environment and culture, but are guided by a typical and expected approach to work.

Many times it isn't a single person who is responsible for innovation, it is the collective group that has worked together to cultivate and develop new ideas: a knowledge network. Some large organizations may isolate their key "creatives" into an innovation incubator. But this is counter-intuitive in that leaves out the vast wisdom and experience of the rest of the organization. Common experience-based knowledge and behaviors exist within knowledge networks in any organization and provide a platform for high performing teams to use—tacit knowledge, new ideas, experienced reasoning or subjective hunches—aimed at better decision-making. Rouse, Cannon-Bowers and Salas (1992) believe that superior team performance is grounded in whether or not common knowledge structures exist between team members, where the team all holds similar mental representations for the tasks and for team functioning (p. 1297.) In this situation, the knowledge structures and behaviors combine to become a mental model. The mental model guides all the steps of the knowledge transfer process and, over time, become an unconscious practice or set of practices.

The challenge for any company is to create a mental model that facilitates their vision at each step of the knowledge transfer process, throughout the enterprise, for all people in all areas. This mental model is a mindset and is vital for survival. The organization that values its knowledge networks and knowledge transfer process will trust its mindset and process. But is a mindset enough to be innovative?

## **6. Innovative Mental Models**

The word innovation implies a new idea, a new product, a spin on an existing service, or a product improvement. The innovation may magnify or enrich a component of a product; it may eliminate a process or an element, for efficiency. A key discipline for any organization to promote innovations is to encourage new ways of communicating. Mental models are implied, sometimes discussed, and many times unarticulated forms of behaving at work; they can be unconscious, and as stated, are mindsets for how to operate. For innovation the mindset must not be static.

In fact, in order to uncover and increase innovation, the mindset must be dynamic. The actual process for developing an innovative mental model should include: stakeholders communicating and articulating their position or ideas, describing why they advocate the particular choice, and then asking for questions or evaluations of their assumptions behind the choice (Senge, 2005). The approach to work may be to incorporate cross-functional representatives together, or to use “reverse” mentoring—bringing younger strategists and outsiders into the fold of the older strategists. The outcome is that the team or group can examine all the potential decisions first, before constructing a final scheme. The fresh members challenge the existing networks and create a new dynamic. But in order to be innovative, the mental process must keep in mind the entire system in which the product or strategy resides.

As stated earlier, systems thinking blends the many influencing forces into the process of sifting knowledge. Systems Thinking makes the mental model and knowledge process more dynamic. Systems thinking expands the horizon, and benefits the hunches, collective reasoning and scrutiny for the mental model and knowledge network experience. This mental model supports an open manner of communicating for the network: examining outcomes, associating disconnected points, reasoning with experience and subjective positions, challenging ideas and

assumptions, testing diverse perspectives. This refreshing practice, which Senge(2005) says many large successful organizations use, must be adopted by the entire organization if they are to cultivate and benefit from an innovative mental model. Systems thinking increases the dynamic framework of the mental model; it influences and stretches the degree of producing innovation. With the entire system (customers, markets, trends, concerns, and risks) embedded in it, the mental model is actively dynamic and has plenty of room for creativity (Figure 2)

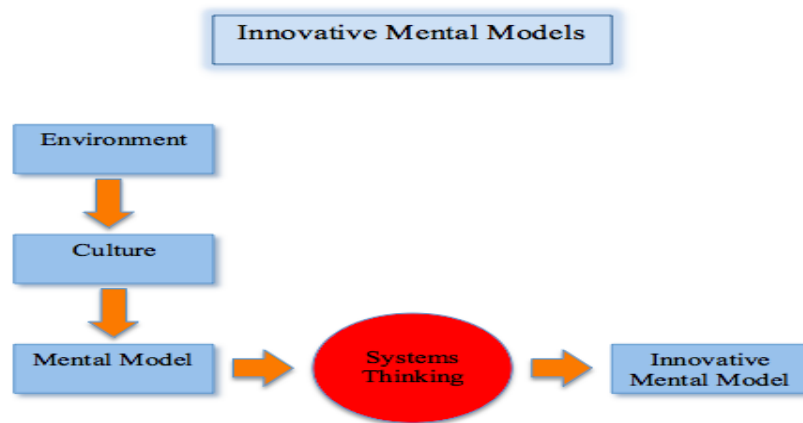


Figure 2.

The system thinking and innovative mental model in our exemplary organization is like a mother that is willing and able to shelter a baby's growth, movements and development. The organization must shelter its improvement or new product until it emerges fully formed and complete. Through the framework of collective thinking and communication, the organization will manage and guide knowledge to ensure a more innovative and creative end.

## 7. Conclusion

Knowledge has become a commodity, which operates in its own market, with its supply and demand trends. In the end, Knowledge Transfer (KT) is a financial transaction, defined by



gain and loss parameters. Consequently, knowledge transfer is more than passing knowledge from one owner to another. It means incubating acquired knowledge for new environments or products, to maximize usage and introduce a high return on investment.

Like any acquisition, investors must be assured that knowledge transfer will be managed in the most appropriate style. Handling, saving and safeguarding knowledge is known as knowledge management (KM). Since the late 1980's, KM has evolved as a management branch of science, to fulfill the need of creating and maintaining the best incubating environment possible.

The organization's designers and developers must foster systems thinking, giving knowledge managers the room to establish the tools and processes to digest transferred knowledge. In other words, system thinking is like organization's lungs, where KM is the ability to breathe as much of the air (knowledge) as possible. The innovative mental model simply presents the ability to breathe in and out and hence, produce new technologies and products.

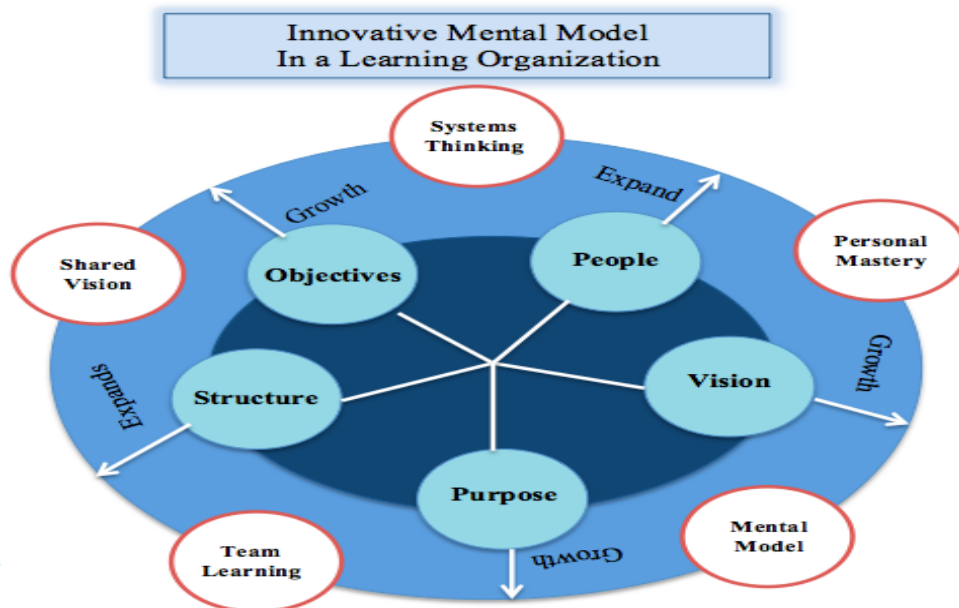


Figure 3.

To fix an innovative mental model in their setting, designers and developers have to put in order the five foundational elements of the organization: people, purpose, structure, vision and objectives. These five must be aligned with Senge's five disciplines of team learning, shared

vision, personal mastery, mental models and systems thinking (Figure 3.) This alignment produces the innovative mental model. As a result, knowledge management has two large lungs to incubate knowledge transfer. And for the organization, return on investment is the only measure that qualifies whether the innovative mental model is in place and effectively in action.

## References

- Ajmal, M. & Koskinen, K.U. (2008). Knowledge Transfer in Project-Based Organizations: An Organizational Culture Perspective. *Project Management Journal*, (39), 7-15. Retrieved from <http://discover.sjlibrary.org:file://localhost/Users/gearup/Desktop/Article%20Knowledge%20Transfer%20Culture.html>
- Argyris, C. (1995). Action science and organizational learning. *Journal of Managerial Psychology*, 10(6), 20-26
- Birkinshaw, J., Hamel, G., & Mol, M. J. (2008). Management innovation. *Academy of management Review*, 33(4), 825-845.
- Denzau, A. T., & North, D. C. (1994). Shared mental models: ideologies and institutions. *Kyklos*, 47(1), 3-31.
- Hirschfeld, L. A., & Gelman, S. A. (Eds.). (1994). *Mapping the mind: Domain specificity in cognition and culture*. Cambridge University Press, retrieved from: <http://catdir.loc.gov/catdir/samples/cam031/93003812.pdf>
- Hill, R. C., & Levenhagen, M. (1995). Metaphors and mental models: Sense making and sensegiving in innovative and entrepreneurial activities. *Journal of Management*, 21(6), 1057-1074.
- Pak Tee, N. (2004). The learning organisation and the innovative organisation. *Human Systems Management*, 23(2), 93-100.
- Riehle, R., (2015, September 2), Personal interview.
- Sarka, H. (2014). Tools of Internal Communications from Knowledge Transfer Perspective. *Journal of Competitiveness*, (6), 50-62, Retrieved from

[http://discover.sjlibrary.org/iii/encore\\_sjsu/articles/C\\_\\_STools%20of%20Internal%20Communication%20from%20Knowledge%20Transfer%20Perspective.%20\\_\\_Orighresult\\_\\_U\\_\\_X0/SdoArticles?lang=eng&suite=sjsu](http://discover.sjlibrary.org/iii/encore_sjsu/articles/C__STools%20of%20Internal%20Communication%20from%20Knowledge%20Transfer%20Perspective.%20__Orighresult__U__X0/SdoArticles?lang=eng&suite=sjsu)

Senge, P.M., (2005) *The fifth discipline*, Doubleday Publishing.

Senge, P. M. (2014). *The dance of change: The challenges to sustaining momentum in a learning organization*. Crown Business.

Trott, P., (2008) *Innovation Management and New Product Development*, Prentiss Hall, Essex, England