Do You See What I See: a project manager's knowledge nightmare.

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DO YOU SEE WHAT I SEE: A PROJECT MANAGERS' KNOWLEDGE NIGHTMARE

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INTRODUCTION

To deliver a project for a client, a project manager will be required to adapt to change from time to time by finding, retrieving and processing knowledge. It is of value to an organisation to facilitate this process of knowledge exchange to ensure that they in turn can deliver on their agreed strategy. This paper will focus on knowledge transfer, firstly by reviewing the knowledge context through the lens of the accepted theories of knowledge management. This will include an examination into how knowledge is created. This creation process will require a review into the motivation and learning styles which will assist in developing a deeper understanding of how a project manager transfers knowledge.

To determine if the environment has an impact on the capacity of the project manager to transfer knowledge, a review will be undertaken into the physical and virtual spaces where projects are managed. Through an examination of these environments, indicators can be identified that may enhance or detract from the ability of the project manager to transfer knowledge. An understanding of these influences will provide the project manager with the ability to "see" what knowledge is required to avoid the nightmare often created through ill-informed, problematic situations.

KNOWLEDGE TRANSFER

The term 'Knowledge Transfer' in the context of this paper is to identify how knowledge is transferred between project managers when delivering to the client's expectations. If project managers are to transfer knowledge, "projects and project organisations require exceptionally efficient knowledge management" (Kasvi, Vartiainen & Hailikari 2003, p. 578).

Holton (1996) developed a 'training transfer system' to assist human resource departments measure the impact of training on an organisations 'bottom line'. This map was based on Kirkpatrick's (1996) 'model for training evaluation'. Holton added variables such as "motivation to learn, trainability, job attitudes, personal characteristics, and transfer of training conditions" (1996, p. 5). The 'training transfer system' was further modified by Hatcher and O'Connor (2009) when undertaking work with an Australian University, a government program and project managers to assess the training outcomes in the workplace. The ability to deliver organisational results, based on an individual's performance after a learning intervention was also proposed by Yamnill and McLean (2001) according to three sets of theories: 1. motivation to transfer, 2.

transfer design, and 3. transfer climate theories. These studies did not delve into how knowledge is transferred between project managers while delivering projects.

Knowledge can be defined as "a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information" (Davenport & Prusak 1998). To ensure knowledge has meaning, it "must be continuously re-created and re-constituted through dynamic, interactive and social networking activity" (Swan et al. 1999, p. 14).

The transfer of knowledge occurs in physical and virtual environments and will be encouraged by some or hindered by others. This environment where knowledge is transferred requires five agreements (Eraut 2004, p. 256):

1. The extraction of potentially relevant knowledge from the context(s) of its acquisition and previous use
2. Understanding the new situation - a process that often depends on informal social learning
3. Recognising what knowledge and skills are relevant
4. Transforming them to fit the new situation
5. Integrating them with other knowledge and skills in order to think/act/communicate in the new situation

KNOWLEDGE CONTEXT

The transfer of knowledge is underpinned by the theory of knowledge management. This provides the background on which to understand how a project manager may manage knowledge when working on projects and in turn the ability to transfer that knowledge.

To achieve appropriate outcomes, knowledge must be created and converted in an often evolving and dynamic environment. Nonaka, Toyama and Konno (2000, p. 8) have developed a 'Model of Dynamic Knowledge Creation' to define the knowledge creation process in terms of three elements:

1. The SECI process: the conversion between tacit and explicit knowledge through Socialisation, Externalisation, Combination and Internalisation
2. *ba:* A place where knowledge sharing, creation and utilisation can be shared
3. *Kno*wledge Assets: The moderation of inputs and outputs to the kno*wle*dge creation process that can be defined as experiential, conceptual, sys*tem*atic and routine

What has not been evident in the literature is how this knowledge is then transferred, in particular how project managers may transfer knowledge while working on a project.

Knowledge Management

The management of knowledge is a skill required for project managers to deliver their projects. The understanding of this discipline is necessary for the study of knowledge transfer, and in particular the way in which individual project managers manage knowledge.

Xu et al (2008) undertook a critical review of the knowledge management literature in the 21st century and found over 10,000 papers published in this area.

When we deconstruct the term knowledge management, the literature refers to a practice where information is collected, stored, distributed and measured within an organisation. Groff and Jones extend this definition to include the purpose of knowledge management as "the tools, techniques and strategies to retain, analyze, organize, and share business expertise" (2003, p. 10). The 'levers' that can then be used to exploit knowledge in an organisation have been defined by Skyrme (2003, pp. 68-69) into seven categories. These knowledge levers are described in the table below.

Lever	**Key Activities**
Customer knowledge	Developing deep knowledge sharing relationships. Understanding the needs of your customers' customers. Articulating unmet needs. Identifying new opportunities.
Knowledge in people	Knowledge sharing fairs. Innovation workshops. Expert and learning networks. Communities of Practice.
Knowledge in products and services	Knowledge embedded in products. Surround products with knowledge, e.g. in user guides, and enhanced knowledge-intensive services.
Knowledge in processes	Embedding knowledge into business processes and management decision making.
Organizational memory	Knowledge sharing. Best practices databases. Directories of expertise. Online documents, procedures and discussion forums. Intranets.
Knowledge in relationships	Improving knowledge flows between suppliers, employees, shareholders, community, etc.—using this knowledge to inform key strategies.
Knowledge assets	Identifying intellectual and knowledge assets. Measuring and monitoring their development.

Knowledge Levers (Groff & Jones 2003, pp. 68-69)

These knowledge levers can be aligned to what Haggie and Kingston refer to as 'Knowledge Management Strategies'. These strategies focus on three areas of knowledge management, 1. The knowledge, 2. Business areas or processes and 3. the end results (Haggie & Kingston 2003). These focus areas were further refined by Hansen, Nohria and Tierney (1999) when they observed two distinct knowledge management strategies being used in consulting firms. The two strategies to manage knowledge were either codified or personalised. Codification of knowledge provided to be of high-quality, reliable, and fast in terms of information-systems implementation by reusing codified knowledge. This strategy requires a relationship between people and the documents so as to develop an electronic document system that codifies, stores, disseminates, and allows reuse of knowledge. Personalisation of knowledge provided creative, analytically rigorous advice on high-level strategic problems by channelling individual expertise. This strategy requires a relationship between people to be able to develop networks for linking people so that tacit knowledge could be shared.(Hansen, Nohria & Tierney 1999, p. 109)

In the context of a project, Reich (2007) has developed a definition of knowledge management that entails "the application of principles and processes designed to make relevant knowledge available to the project team". Kasvi, Vartiainen and Hailikari (2003, p. 572) identify four groups of activities that further define knowledge in a project context:

1. Knowledge creation, for example collection, combination and refinement
2. Knowledge administration, for example storage, organisation and retrieval
3. Knowledge dissemination within and outside the project
4. Knowledge utilisation and productisation, for example integration into products and decisions, and application in other projects

"Effective knowledge management facilitates the creation and integration of knowledge, minimizes knowledge losses, and fills knowledge gaps throughout the duration of the project" (Reich 2007, p. 8). A project manager will need to develop knowledge management strategies to be able to "name, frame, group, and describe the phenomena of organisational [project] life" (Argyris & Schön 1978, p. 317). The development of a knowledge management system is essential when managing projects to capture what Argyris and Schön describe as the 'modes of organisational knowing'.

HOW KNOWLEDGE IS CREATED

Knowledge needs to be created before it can be transferred. To create knowledge, several underpinning attributes will influence the outcome. These attributes rest within an individual and are driven by their motivations and learning styles. What motivates a project manager to transfer knowledge needs to be understood through a review of the accepted motivational theories. Learning styles can be applied at an individual level so as to then be used in project situations. The capacity of a project manager to transfer knowledge may not follow the 'rules' or models described, but may be more intuitive.

What Motivates Individuals to Create Knowledge?

The successful transfer of knowledge could be attributed to how motivated a person is to share their knowledge. To examine this assumption we need to review the work done by several authors who undertook studies in human behaviour over the last century. The basis for motivation, according to Maslow, is the Humanistic theory (1987), which defines people through their drive to reach their potential. Maslow's earlier work on the Theory of Motivation (1943) suggested that motivation was driven by preparatory or consummatory behaviour that could be defined by sequential needs. These needs, known as 'Maslow's Hierarch of Needs', were the result of conscious or unconscious motivations and that motivation was "typically an act [that] has more than one motivation" (1943, p. 1).

The work done by Maslow to describe how a hierarchy of needs can be used to motivate people is based on the earlier work of Freud (1923). The exchange or relinquishment of a portion of happiness for security is described by Freud in terms of the sacrifices that people make to strive for a civilized way of life. McClelland (1961, pp. 37,38), describes the basis

of Freud's view of motivation in terms of Psychoanalytic Theory. This theory is based on the belief that people are unconsciously motivated by the need to survive or avoid being destroyed. An alternative theory to describe what motivates people was developed by Alderfer (1969) which resulted in the identification of three levels of need: Existence; Relatedness and Growth, known as the ERG Theory.

The capacity of a person to learn, one of the cognitive capacities that can be adjusted, requires the basic needs to be satisfied. Maslow describes these basic cognitive needs as the desire "to satisfy curiosity, to know, to explain, and to understand" (1987, p. 23). The desire to create order and symmetry using systems to structure our surroundings meets the aesthetic needs of a person. These basic needs are, according to Maslow (1987, pp. 26-31), measured in degrees of satisfaction, the level of consciousness a person has of their needs, the impact of culture, multiple motivations of behaviour, unmotivated behaviour, threatening environments, gratification and functional autonomy.

Herzberg (1987) was at the same time studying professionals to develop a motivation-hygiene theory that identified distinct factors that contribute to job satisfaction, or motivation, and dissatisfaction. The factors that resulted in employees being unmotivated were to avoid pain either consciously through learned behaviours or unconsciously. Using these factors to potentially motivate project managers requires an understanding of what Hertzberg describes as the "eternal triangle" (1987, p. 113). To encourage the appropriate attitude for employees, which is hoped will lead to increased efficiencies, Herzberg suggests a working environment that balances this triangle of organisational theory, industrial engineering and behavioural science. To motivate employees Hertzberg suggests that "vertical job loading" is undertaken which provides the employee with an opportunity to grow and learn through the introduction of "new and more difficult tasks not previously handled" (Herzberg 1987, p. 114).

What Learning Styles Assist in Creating Knowledge?

Learning styles may impact on the ability of a project manager to transfer knowledge. The work done by Honey and Mumford (1986) in identifying what influences effective learning paved the way for developing people in the workplace. They defined learning in terms of a manager being able to *demonstrate* that they had learnt something that they had not previously known. The use of a 'Learning Styles Questionnaire' that they developed provided the framework to assist people to identifying how they learn. The learning styles were divided into four groups: 1, Activists, 2. Reflectors, 3. Theorists and 4. Pragmatist. Honey and Mumford suggest that to obtain the maximum benefit, the person needs to select learning opportunities that suit their identified learning style and work within the identified strengths and weaknesses of each.

The work done by Honey and Mumford focuses on the individual project manager, who works in a project team. The work done by Leigh and Leigh (1997) describes the benefits of working in teams and key factors in team development and learning. These factors include strategies to set goals, manage conflict, make decisions, manage communications, avoid group think and reflect.

This type of learning can be described as Action Learning, which according to Yorks et al (1999, p. 3) is:

> *An approach to working with and developing people that use work on an actual project or problem as the way to learn. Participants work in small groups to take action to solve their problem and learn how to learn from that action. Often a learning coach works with the group in order to help the members learn how to balance their work with the learning from that work.*

Davey et al (2002) identified four 'Learning Style Themes' from an experiential learning marketing subject taught for undergraduates. The four themes were that the students learnt by 1. Doing, 2. Rehearsing, 3. Addressing individualism, and 4. Laddering activities to manage expectations. Work related skills were developed and the group identified additional learning sub-themes that included collective synergies, individualism and group dynamics.

THE KNOWLEDGE ENVIRONMENT

The environments in which knowledge is shared can be in a physical and virtual space. This can present several barriers and enhancers for the project manager.

The Physical Environment

To provide the appropriate environment to transfer knowledge, learning can be 'situated' where unintentional learning may be the outcome. This environment can be formally structured to teach project managers and observe their responses to a variety of situational contexts. The process to undertake this collaborative work is two-fold: firstly a 'participant' needs to be placed in a situation and secondly, they then need to be observed so appropriate data can be gathered to assess their capability.

To begin the placement, the manager needs to ensure that appropriate agreements are in place for the project manager. The place of work needs to be appropriate for the learning outcomes and learning tools need to be identified and approaches discussed and agreed. Challenging issues can present themselves if the manager and the participant are not prepared for what Megginson and Boydell (1979) define as the 'learning blocks':

- Perceptual – participants cannot see or recognise the nature of the learning required
- Cultural – participants rigidly adhere to a set of norms that define what is good or bad
- Emotional – the emotional state of participants affects their ability to learn
- Intellectual – participants may not have the intellectual skills necessary to complete a task

When working in the field, the manager and participant need to understand their responsibilities, both legally and ethically. There is a duty of care for both parties and importantly for those also working in the field, such as the client and work colleagues. The manager also needs to be aware of specific issues such as: game playing where covert agendas are being followed; mirroring where the learner is unable to emotionally

manage the situation and consequently transfers responsibility or ownership, consciously or subconsciously; not meeting learning needs and managing conflict. These can all be managed through the appropriate preparation and early detection with strategies ready to use so these issues can be resolved appropriately.

The Virtual Environment

The use of online portals such as the Internet, e:mail, web pages and digital versions of diaries provide another environment for the transfer of knowledge. The structure of these virtual environments may attempt to emulate the physical environment. In doing so, protocols need to be established to ensure the project manager understands what the expectations are when working in this space.

A post graduate program that delivered a web-based interactive online project management course was described by Sankaran and Kaebernick (2005) as being "extremely successful…. and feedback from students clearly indicates that they have obtained additional knowledge and skills that will be of value in their current position" (2005, p. 9). There were several challenges that could be mirrored in the physical learning environment, and included: diverse backgrounds, experience with project management, class modes, time zones and nature of work, different cultural and language backgrounds, technology, and participation. Lee and McLoughlin, (2007) have been investigating the potential limitations of "the one-way flow of information between teacher (as expert) and student (as novice)". They have found that this environment is being replaced by a more creative, collaborative space that produces shared outcomes. The 'novice' can become immersed in a virtual learning environment that encourages "informal conversation, dialogue, collaborative content generation, and the sharing of information" (Lee & McLoughlin 2007). However, the recommendations from the study are that the virtual environment needs to "supply support and scaffolding for learning and reflection within the authentic, real world contexts in which knowledge construction naturally occurs" (Lee & McLoughlin 2007).

The advent of virtual project teams, facilitated by the advances in technology and the increase in cross cultural work can impact on the project manager's ability to transfer knowledge. The definition of a virtual team is a "a team [of people] that has a common purpose that use technology to cross time zones, distance and the boundaries of organisations" (Lipnack & Stamps 1999, p. 17) A virtual team has three facets to deliver on the project – 1. Purpose, 2. People and 3. Links, or connections with defined inputs, outputs and processes that connect the two. This is described in the table below.

Facets	Input	Processes	Outputs
People	Independent members	Shared leadership	Integrated levels
Purpose	Cooperative goals	Interdependent tasks	Concrete Results
Links	Multiple Media	Boundary-crossing interactions	Trusting relationships

Virtual Team Principles (Lipnack & Stamps 1999, p. 19)

Again, all these characteristics will be reviewed to determine what impact they have on the project manager transferring knowledge when they are working on a project.

Environmental Barriers and Enhancers to Knowledge Transfer

The identification of barriers and enhancers can help to manage the risks and opportunities associated in the space that knowledge will be transferred. Hase, Sankaran & Davies (2006) describe how to overcome the non-technical barriers when managing knowledge in an organisation. The outcomes of this study were the result of an investigation into the compromised functioning of an organisation. The lack of knowledge was the direct result of an individual who sort to maintain power and control by blocking knowledge to co-workers. The organisational characteristics that may lead to this abuse of power were identified in a case study by Hase et al (2006, pp. 37-38) as 1. Lack of executive support, 2. Not having the active support of identified 'knowledge' champions, and 3. Misunderstanding of the value knowledge management . The study provided an example of a process to illicit issues from people through a series of workshops and transparent recording and grouping of issues. The facilitator allowed the participants to share in the ownership and solutions to the issues identified. This provided a structured process to minimise the potential for abusive or dysfunctional behaviour that could result in a potentially dysfunctional organisation.

Hatcher and O'Connor (2009) identified five key themes where individual learning can be facilitated when transferred from an educational to a work environment. The themes to reduce the barriers for knowledge transfer include (2009, p. 14):

- Strategic thinking
- Being self-aware and using communication effectively
- Desire for Organisational improvement
- Personal Confidence in and critical reflection on decision-making
- Sense of respect from the organisation

A research study undertaken by Faraj and Sproull (2000) identified factors that would enhance the ability of an organisation to create a supportive environment in which to share knowledge. The research focused on the co-ordination of individuals who brought 'expertise' in the form of specialist skills and knowledge to a project team. The potential for communication breakdowns and conflict were addressed by developing a framework aimed at "managing resources and expertise dependencies" (2000, p. 1555). At a team level the ability to "develop a common language for describing tasks, assignments, roles, and location of expertise" (Faraj & Sproull 2000, p. 1556) can assist in breaking down the barriers of understanding and transferring knowledge which could lead to enhanced performance.

CONCLUSION

A project manager will be exposed to many forms of knowledge when managing a project. The ability to "see" what knowledge is required to complete the project within the client brief can prove to be a nightmare. When dealing with barriers to understanding what is required, from an organisational, technological or personal perspective, the project manager must create an environment that facilitates the transfer of knowledge. The context of knowledge transfer in this temporary organisation can be enhanced by applying some guiding principles for the management of knowledge. The result will reflect the ability of the project manager to understand the impact of effective knowledge management in a dynamic physical and virtual environment.

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