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Unlocking the Value of Knowledge Transfer

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This white paper describes how effective knowledge transfer can help ensure that your workforce has the capabilities, flexibility and resilience to adapt to change and therefore thrive versus your competition.

Keywords Knowledge Transfer, Knowledge and Know-How, Value, Workforce Capabilities

Introduction

The aging workforce, with looming boomer retirements and anticipated dire consequences as important knowledge walks out the door, has been a topic of discussion, often with only minimal planning. The exodus is inevitable, but unfavourable economic conditions and poor personal financial planning have caused boomers to delay their departure. You might be breathing a sigh of relief that your company has been granted a window of opportunity to mitigate against knowledge loss risks and deal with more pressing issues. Are you using these next few years to get prepared?

At the same time, there is a growing concern about a skills gap in many of the new hires joining your company. According to the American Society for Training and Development (ASTD) [1], a critical skills gap exists when a company has difficulty growing and remaining competitive due to its inability to fill critical jobs with employees who have the necessary skills and knowledge to perform capably. There are two underlying causes: changing jobs (which is always occurring) and lagging education in the school systems. Your company cannot wait for government- and business-sponsored initiatives to address education reform. You may have to develop your own training programs to close the skills gaps.

Not only is your workforce being squeezed at both ends, there are plenty of other forces reshaping business in the 21st century. Examples include: globalisation, increased competition, growing emphasis on knowledge work, critical skills gaps in technical jobs, less training and experience, generational diversity, environment and safety concerns, virtual teams, outsourcing and contractors, information overload, and social networking. How will these forces impact your company's strategic plans and business goals?

Business Case

As a business manager you face many challenges in meeting objectives: such as aligning team goals to strategic plans; delivering targeted business results; addressing safety, reliability and other compliance directives; and increasing workforce performance – all of which must be done within tight budgets and timelines. The toughest challenge may be to ensure that your team has the training and know-how to deliver the high-quality results necessary to achieve your business goals and metrics. And that is just your day job.

Corporate restructuring, hiring, mergers and acquisitions, or plans to reduce costs by adding resources in low-cost geographies create additional needs to get new employees up to speed rapidly. Do not forget the boomers; once their investments recover, they will start retiring at a faster pace. You need to make sure their departure does not leave gaps in the critical knowledge and skills that you need to run and grow your business.

These scenarios have at least one thing in common: a requirement for cost-effective ways to transfer knowledge from those who have it to those who need it. This need has never been greater. Are you getting practical and effective guidance on what to do from your company's HR or Knowledge Management (KM) groups?

Knowledge is a necessary ingredient for high workforce performance, but it is not enough. You also need seasoning in the form of experience that applies the knowledge in real work. The combination of knowledge with the ability to apply it effectively is called *know-how*, and it typically takes many years of practice to develop.

The difference in effectiveness of knowledge and know-how can be illustrated by comparing a medical intern to a surgeon with ten or more years of practice. If you need an operation, you are more likely to choose the know-how of the surgeon over the intern's up-to-date knowledge from the latest medical journals. When an employee already has significant know-how, new knowledge can be quickly learned and put into action. Novices lacking this experience will be unable to apply new knowledge as quickly.

Value of Knowledge and Know-How

Many efforts have been made to determine the value of knowledge. Such efforts range from estimating the contribution of intellectual capital 'intangible assets' as part of a company's book value (examples: Sveiby [2], Edvinsson [3], and Stewart [4]) to the 'Learning and Growth' metrics of Kaplan & Norton's Balanced Scorecard [5]. Even though a generally recognised quantitative description remains elusive, most people believe that knowledge has business value. For this discussion, let's use a simple metric for knowledge: revenue per employee (total income divided by total number of employees).

Know-how grows over the course of a career. There are a few common milestones along this journey such as novice, competent performer, expert, and master. Think about the learning journey of new hires. They enter your company with a good formal education and are up-to-date on theories and principles. It normally takes them a year or two of training to understand company processes for getting work done and to become productive novices. The revenue breakeven point (i.e., the length of time it takes a new employee to begin generating a positive cash flow after covering salary and training costs) will depend on how fast they learn and the nature of their job assignments. Positive cash flow may not occur until several years after hire. Perhaps an additional three-to-four years of increasingly challenging job experiences will make them competent performers who are comfortable with company processes and able to deliver quality work with a minimum of supervision.

A commonly accepted benchmark is that it takes an employee seven-to-ten years of concentrated work and study to become a subject matter expert in a field; able to work independently, make novel contributions, and have a broader impact on the business. A small number of employees continue to work in their field for many additional years, becoming masters with deep experience and significant analytical skills. Masters are essential for keeping your company competitive. They are the thought leaders for the company and their industry through innovative contributions to their field.

The difference in knowledge between the novice and the expert is visible and measurable by the value of their contributions. For example, in a Wall Street Journal article [6], Alan Eustace, Google's vice president of engineering, said that one top-notch engineer is worth 300 times more than an average engineer in terms of the value they can generate. Revenue contribution is directly related to know-how: the employee's knowledge, skills and experience. The development of this capability can be illustrated by learning curves that show the speed and depth of know-how development (see Figure 1).

The Know-How axis is divided into intervals that correspond to competency milestones. A typical employee's learning curve is illustrated with the solid black line ('Normal'). The exceptional employee's learning curve – as shown by the dashed blue curve – rises faster and reaches a greater level of know-how. The gap between these curves is an indication of the greater revenue delivered by top-notch employees.

Effective knowledge and know-how transfer can make a significant and measurable impact on all of the challenges described above. For example, it can shorten a new hire's time to positive cash flow (after recovering salary and training costs) by accelerating early career learning as shown by the dashed red learning curve. This enables employees to handle meaningful work more quickly with less supervision (which is exactly what Gen Y is asking for). Effective knowledge and know-how transfer can increase the productivity and performance of your staff to levels approaching that of your best practitioners, and reduce business risks or disruptions by identifying and transferring critical expertise before key staff leave. Business benefits of effective knowledge and transfer can be measured via increased revenue, reduced costs, spurring of innovation to create new products and services, and increased customer satisfaction.

Accelerating the Growth of Know-How

How can you accelerate the early career learning of a new hire by a year or two, or increase workforce performance? There are a number of proven processes to do this – including knowledge hand-over or elicitation, mentoring, guided experience, participation in a community of practice (CoP), and use of a competency management system. The remainder of this section outlines a few practical applications.

IT outsourcing companies have a critical need to get up to speed quickly, often in a very short, two-to-three month window. They have developed repeatable methods to capture business and technical knowledge about applications, customers, and maintenance or enhancement processes. A typical transfer process involves classroom training, application documentation done by the new outsourcing staff, shadowing with the client company experts, and performance assessment to certify successful learning. This is a very effective model that can be easily adapted for internal job transitions with your own new hires.

Knowledge Transfer methods can also shorten the time to becoming a competent performer or expert. The dashed red learning curve in Figure 1 tracks the increase in know-how over the accelerated path. The area between this and the 'Normal' curve represents the additional revenue, which is made possible by the faster learning.

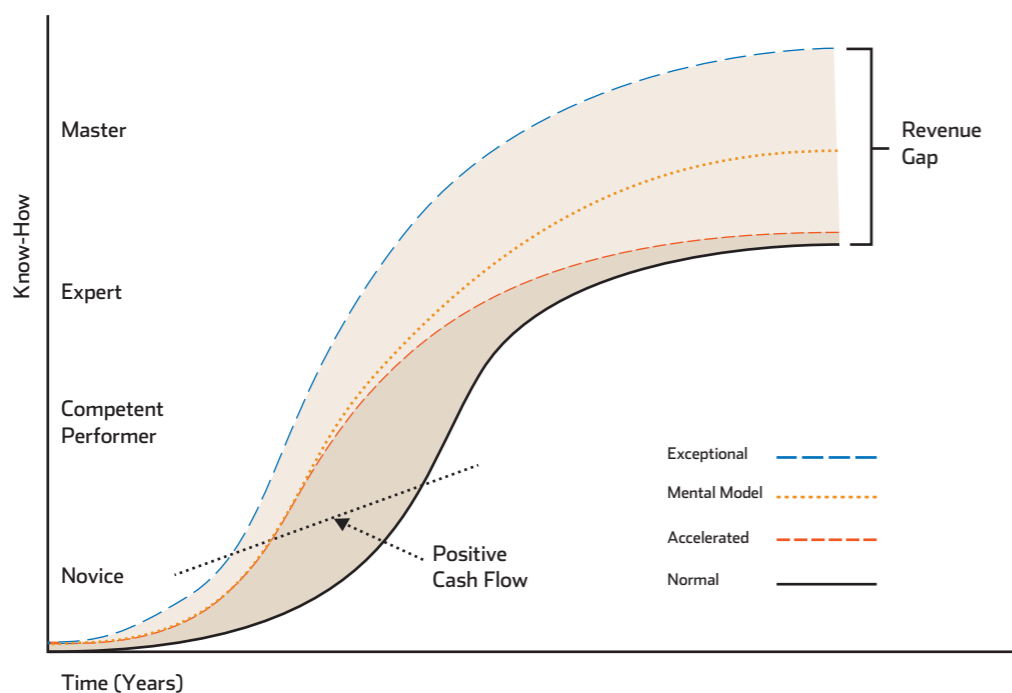
Another very effective approach uses a formal, multi-year development program that includes education about the business, discipline-focused skills gap assessment with targeted training and mentoring, plus rotational assignments in several business units to gain hands-on operational experience [7]. Based on competency assessment tools described below, this type of early career program has been shown to reduce the time to expert performance by several years.

The ability to measure knowledge and know how is an important tool for creating and monitoring effective learning and development plans. An alliance of companies [8] has developed such a robust competency management system. Their system maps out critical skills and performance levels for each of the know-how milestones (from novice to master). For each skill level, there is a set of expected capabilities with specific training and performance assessments to demonstrate learning. Managers work with their employees to identify the most important skills for the current assignments, and jointly develop a learning action and assessment plan. This system accelerates know-how growth by helping managers quickly close the most important knowledge gaps of their staff.

A well-managed Community of Practice (CoP) is another effective and versatile knowledge transfer method. A CoP is based on two key processes: collection and connection. Practitioners collect documented knowledge – including best practices, operating standards, tools, and examples of past work in the CoP's repository. Searchable member profiles help less-experienced employees find and connect to experts who are willing to share experiences or direct them to other resources for help. Enabled by social collaboration tools, members can also post questions to the community in order to obtain quick answers that solve problems they are facing.

In one such 'Question and Answer' system, engineers from around the world post questions about manufacturing processes or equipment and often return the next day to find several useful suggestions. This Q&A system provides an easy way for the person posing the question to describe the results of their actions. This adds to the collected knowledge that is available for other engineers who might face similar situations in the future. The system also captures an estimate of business value in terms of time and costs savings. In the first years of operation, over US \$100 million in operating cost savings have been documented.

Figure 1
Learning Curves



Power of the Mental Model

The ultimate goal is to capture and transfer the considerable, deep expertise of your top experts in order to increase the performance of the less-experienced practitioners. This experience is often internalised in a 'mental model' – a capability that enables an expert to quickly recognise cues or symptoms in the challenging problems they face and almost instantly recall how they have solved similar problems in the past or even combine experiences to create novel solutions. People that achieve master-level performance often follow the dashed blue 'exceptional' learning curve. Their know-how results in significantly greater revenue contributions as indicated by the blue wedge (labelled 'Revenue Gap').

While their many years of experience cannot be quickly transferred, it is possible to elicit the critical characteristics that the master has learned to recognise when he is diagnosing problems, creating designs, or making decisions. It is even possible to help the master articulate some common patterns with associated problems and how they were handled. Such knowledge capture can be done in a very short time, such as with an expert who has unique, critical knowledge and who announces plans to retire in two months. The less-experienced employees still have to work on their own set of problems and solutions to become proficient. But with the mental model they can short-cut the normal trial-and-error learning process. This allows them to gain know-how more rapidly and follow a learning curve similar to the dotted red line in Figure 1. ROI estimates of up to 10:1 for this knowledge elicitation approach have been reported [9].

Knowledge Transfer Methods

Table 1 describes a number of practical and effective knowledge transfer methods based on my 18+ years of experience in a global Fortune 5 corporation. They are part of a comprehensive playbook that has been used effectively to develop individual expertise as well as broader corporate knowledge such as best practices and lessons learned. Each method has characteristics that make it more suitable for specific knowledge transfer scenarios. Selection criteria include: how long the expert is likely to be available and how much time can be committed, the target competency objective of the learner (competent or expert), how many people need to learn, the depth of the subject knowledge (principles and theories, operational practices, or highly cognitive tasks), and the ability to articulate the expertise.

Success Stories

Over 2,000 operators, engineers and plant superintendents, who are globally distributed across 16 sites, are able to ask for advice and share successful practices regarding day-to-day manufacturing operations. Supported by an email-enabled collaboration tool, they get answers in hours instead of weeks and they continually expand a searchable knowledge base of problems and solutions. People asking questions are prompted to summarise how they solved their problem and provide an approximate estimate of time and cost savings. More than US \$100 million in savings has already been documented. Another such system supports Q&A sessions between oil exploration staff and production staff. Similar success stories are collected on a regular basis.

The business analyst role is critical to many projects and successful IT applications. The range of knowledge covered by this discipline is huge. One of the first deliverables of the *BA Community of Practice* was an internal curriculum for company-specific skills, processes, tools and templates. This work resulted in a robust competency model that has become part of the corporate learning and development system. Serving as the steward of their discipline's knowledge is a very important role. A growing number of CoPs are tapping the brains of their skilled practitioners to develop global standard practices for key operations and processes. By fostering this consistent approach, they are raising the performance of the global workforce to the levels of their best practitioners.

Drilling for oil is a very expensive process. Costs for drilling rigs range from US \$150,000 to US \$400,000 per day. Multiple wells are drilled in a single field over a period of time, but the original drilling team has probably moved on to other assignments. By following a standard process and carefully documenting each step in the work (e.g., the type of rock encountered at various depths, the type of drill bit and drilling mud that cuts best through a specific rock layer), the team leaves an important legacy for their successors. This team-to-team knowledge transfer dramatically reduces drilling time and saves a lot of money on subsequent wells.

Table 1

Knowledge Transfer Playbook

Knowledge Transfer Method	Description
Knowledge Handover Checklist	Used by manager and incumbent to identify important information the successor needs to know in order to get up to speed. Topics include: team's business context, job roles and responsibilities, work processes or projects, information sources, key contracts, and how performance will be assessed. These topics form the core for many other knowledge transfer methods.
Master Class	A learner presents a challenging problem to the expert in a group setting. Other participants observe and ask questions as the SME discusses the learner's situation. The SME provides strategies, theories, techniques, best practices, common errors, and stories related to the problem based on personal experience.
Q&A	A social networking process that enables a person struggling with a problem to ask questions and quickly receive answers from a group of practitioners in a discipline or domain. The process is usually enabled by collaboration tools or email.
Conversation with the Expert	Colleagues submit questions for an expert which are to be answered in a meeting or teleconference. During the session, follow-up questions are possible. The session may be recorded, transcribed and organised for easy retrieval of information nuggets.
Community of Practice	A group of practitioners in a discipline that connect in order to seek and share experiences, to develop and adopt practices or tools, and to provide support for a learning agenda.
Peer Assist	Experts share experiences and knowledge in a facilitated meeting with a person or team that is looking for advice on a challenging problem or project.
Job Shadowing	Opportunities for a learner to observe the SME interacting with others or doing more complex work. Includes setup and debriefing discussions.
Technical Monitoring	A structured approach that helps an SME to break work into teachable moments, with assessment in order to demonstrate measurable learning. The learner increases their ability to do more complex work while gaining an insight into the SME's thinking.
Guided Experience	Carefully selected projects or work assignments that fill gaps in experience or broaden and deepen targeted skills. 'Guided' involves active SME observation and feedback as the work is performed.
Knowledge Coaching	Combines mentoring, shadowing and observation to identify the learner's competency gaps and guide their development via timely performance feedback. The SME enables the learner to work on projects that are above their current skill level in order to accelerate learning while cost-effectively ensuring that the project is successful.
Team-to-Team Transfer	Some complex, structured projects have many unknowns at the outset. If a team is able to capture learning in an accessible repository during the project, this knowledge can be reused by the team for a subsequent project or it can be handed off to another team in order to significantly accelerate their work.
Knowledge Elicitation	An interview-based approach with SME(s) to articulate big picture, mental models and detailed 'how to' and 'when to' guidance. Elicitation can be with a single expert or a group.

A growing trend, especially in functions like IT, is to develop staff in lower cost, offshore geographies. Until you can build a critical mass in the offshore location, time zones and distance makes training and development a significant challenge. We have created an efficient and effective knowledge transfer process that is also useful in normal job transitions. It includes skills profiling and workflow analysis that is used to create mentoring plans that deliver measurable results. Following this training, job shadowing and certification verify successful knowledge transfer. This process is typically used with college hires to enable them to deliver competent work results in just a few months.

What do you do if your expert on fuel product quality with 20 years of experience, tells you he plans to retire in two months and you realise that nobody else is ready to take over? In six weeks we were able to elicit a step-by-step process and identify the key elements of this expert's *'mental model'* that made his thinking clear in each step [10]. The successor, a recently graduated chemist hired several months after the expert left, found the explicit knowledge absolutely invaluable. He was able to perform competently after just a few months on the job.

Results like these are what you should expect after you have added tools from the knowledge transfer playbook to your repertoire. Some processes such as Community of Practice or Q&A are relatively easy to implement. However, other processes such as Knowledge Elicitation require more skill and experience. With a good teacher, you can learn to successfully deploy all such processes in your company.

Getting Started

The playbook is part of a practical, proven, knowledge transfer process developed and deployed successfully in a large corporation. The system is designed to be integrated into the existing operations of any company in order to deliver a range of measurable benefits. Successful deployment requires a Knowledge Transfer team that consists of business managers, HR or Learning and Development (L&D) staff, KM practitioners, and IT. This team can provide the necessary expertise, influence and accountability. Each group provides key elements.

Business managers establish the need for knowledge transfer. They are accountable for the performance planning and management, the staff development, the work assignments, and the business continuity needed to achieve their goals and metrics. Business managers are also directly responsible for delivering the rewards and recognition that shapes desired behaviour.

A corporate HR or L&D group is responsible for the processes associated with workforce planning and staffing, performance management, learning, competency assessment, succession planning, and retention. Since most companies run these processes annually, HR staff will have frequent conversations with business leaders to identify knowledge transfer opportunities for both leadership development and individual contributor performance improvement.

While HR creates the agenda for these various people processes, they usually have insufficient familiarity with the knowledge transfer processes to make effective recommendations and action plans. The KM group ensures that those processes in Table 1 most relevant to their company's needs are deployed and supported with training and facilitation. The KM team also participates with HR and business managers in order to select the most appropriate transfer methods to meet the specific knowledge goals, and to recommend behaviours that reinforce knowledge transfer. If your company does not have a KM group, HR or L&D is a natural place to support the Knowledge Transfer capabilities.

A number of the Knowledge Transfer methods detailed in Table 1 are enabled by collaboration and document management tools that are supported by IT. Examples include Community of Practice and Q&A that use knowledge repositories, Wikis or SharePoint sites to store the documented processes, tools and templates. The KM team works closely with IT to determine system business requirements; and it works closely with business representatives to configure the IT applications for the most effective storage and retrieval of knowledge and for connection to colleagues who can help solve problems.

Once the knowledge transfer processes are in place, the Knowledge Transfer team can facilitate conversations with business managers in order to identify critical competencies or roles and the expertise needed to meet business goals. They can look at staffing in order to identify who has the knowledge now, who needs it in future, and when. For each Knowledge Transfer opportunity, the KM group helps to select the most appropriate methods, helps to develop SME and learner action plans, and provides facilitation support as needed.

A Sustainable Change in Workforce Performance

An effective knowledge and know-how transfer system should not be considered a one-time reaction to the impending boomer situation; the need is universal and never-ending. The strategy and playbook presented in this white paper provides managers with proven ways to achieve significant, sustainable value by accelerating competency, raising performance, and maintaining business continuity. Implementation by a multi-disciplinary Knowledge Transfer team will provide the right mix of processes, tools and skills to incorporate knowledge transfer into your existing operations. The business benefits will align with your company's business strategy and metrics, and the resulting knowledge-sharing behaviours will help your company remain competitive in the years ahead.

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About the Author

Jeff Stemke is one of the rare practitioners who have successfully created, implemented and written about practical, proven ways to transfer knowledge and develop talent. After 35 years with Chevron, Jeff launched the Stemke Consulting Group; a practice that teaches clients at medium-to-large companies how to integrate knowledge transfer and talent management methods into their existing operations. These capabilities provide measurable value by accelerating competency, increasing workforce performance and minimising disruption when key people retire. Jeff can be contacted at: jstemke@gmail.com.

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