

**What the Research Says about Lessons Learned and What it Means for Your
Organization**

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Introduction

Project organizations - including IT, product development, research and development, consulting, and engineering - face unique challenges when it comes to transferring learning and knowledge from one project to the next. Because project teams disband upon completion of their work, this often means that “the end of a project is consequently the end of collective learning” (Schindler & Eppler, 2003, p. 220). As Disterer (2002) explains, there is often no “formal corpus” left where existing knowledge can be accessed once the project is over. At the organization level, this “re-inventing the wheel” represents a lost opportunity to improve performance from one project to the next (Prusak, 1997).

In project-intensive environments, quality and performance are most often defined by a project’s ability to meet established customer requirements, cost constraints, and schedule expectations (Rad, 2001). Exploiting the knowledge gained on past projects and building on the experiences of project members to continually improve performance can improve all three of these measures, thereby improving the organization’s competitiveness (Owen, Burstein, & Mitchell, 2004).

The purpose of this paper is to provide an overview the barriers and enablers of cross-project learning and to provide recommendations on how knowledge management professionals can help their organizations learn from project experiences in order to continuously improve from one project to the next.

Cross-Project Learning: The State of the Practice

Having identified the problems associated with learning from projects almost two decades ago, Gulliver (1987) wrote a seminal article titled “Post Project Appraisals Pay”

in the Harvard Business Review that describes British Petroleum's approach to learning from one project to the next. He states that the sole mission of the Post Project Appraisal process is "to help British Petroleum worldwide learn from its mistakes and repeat its successes" (p. 128). The process involved investigating the original intent of each project and whether or not that intent was effectively carried out.

Conducting "lessons learned" – also called project retrospectives, post-project reviews, after-action reviews, project post-mortems, and debriefings - is now an accepted standard in project management practice (Bresnen, Edelman, Newell, Scarbrough, & Swan, 2003; Disterer, 2002; Kotnour, 2000; Prencipe & Tell, 2001; Zedtwitz, 2003). Project management guidelines established by the Project Management Institute currently call for lessons learned to be captured and retained after each project is completed (PMI, 2004). Zedtwitz (2002) claims that post-project reviews are "one of the most structured and most widely applicable approaches to passing on experience from one team to the next" (p. 256).

Although the implementation of lessons learned practices differs by company and group, they often begin by engaging team members in reflective discussions about the reasons for project success or failure, almost always after completion of the project (Disterer, 2002; Kotnour, 2000). These "lessons" are then documented and stored in databases for access and retrieval by others in the organization (Newell, 2004). The objective is to "facilitate continuous learning at all levels within an organization" (Zedtwitz, 2002, pp., p. 256), including the individual, the team and the organization.

Darling, Parry and Moore (2005) describe one such lessons learned practice - the After Action Review (AAR) - developed and implemented by the US Army and now

used in part, by companies such as Colgate-Palmolive, DTE Energy, Harley-Davidson and J.M. Huber. AARs are part of a planning and learning cycle that starts before and continues through simulated battles in the deserts of California. The cycle begins with a plan that is drafted by a senior commander of the “opposing force” and includes the task to be completed, the purpose of the task, the commander’s intent, and the expected result. These orders are then shared with subordinate commanders who, through a “brief-back,” verbally explain their understanding of the order. A rehearsal of the battle is then conducted to ensure each unit has a clear understanding of its battle plan.

The AAR meeting is most often facilitated by the unit leader’s executive officer, the second in command. The meeting begins with “a reiteration of the house rules,” which include: “Participate. No thin skins. Leave your stripes at the door. Take notes. Focus on our issues, not the issues of those above us [in the hierarchy].” (p. 88). The executive officer reiterates the original mission, intent, and expected outcome. The officer then describes the actual outcome, provides a brief review of events and reviews associated battle-field metrics that relate to the original objective.

AARs focus on improving a unit’s own learning and performance. Four questions are addressed in the AAR meeting: What was the intent? What actually happened? What caused the results? What will we sustain or improve? After the AAR is completed, Army leaders are “accountable for taking lessons from one situation and applying them to others – for forging explicit links between past experience and future performance” (Darling et al., 2005, pp., p. 91).

Darling et al. (2005) claim that it would be impractical for companies to adopt these processes in their entirety, yet they suggest that key aspects of the AAR cycle can

be utilized to increase competitiveness and prevent the repetition of mistakes. Marsick and Watkins (1999) re-affirm the importance of AARs in the corporate setting, claiming that they can enhance the informal learning of participants through “systematic reflection and structured intervention” (p. 76). It is through these processes of public reflection, they claim, that learning can be “shared and moved to a collective level of understanding” (p. 76).

Consistent with Marsick and Watkins’ (1999) perspective on the importance of reflection for learning from experience, Raelin (2001) claims that public reflection is the key to “unlocking the learning” from project activities and is the form of reflection that can “enhance learning beyond the project (team) level to other levels of experience – individual, organization, and society” (p. 12). According to Raelin, reflection is defined as “the practice of periodically stepping back to ponder the meaning to self and to others in one’s immediate environment about what has recently transpired” (p. 11). Raelin (2001), like Marsick and Watkins (1999), claims that structured intervention must be provided in order to promote deeper levels of reflection.

Deployment of Lessons Learned Practices

Despite the wide acknowledgement of the value of conducting lessons learned practices at the end of projects (Disterer, 2002; Marsick & Watkins, 1999; Raelin, 2001; Zedtwitz, 2002, 2003), researchers have found their actual use in project management practice to be mixed. In a survey completed by 62 managers from the US, Europe and Japan representing over 20 R&D organizations, Zedtwitz (2003) found that 80% of all projects were not reviewed at all after completion and the remaining 20% were reviewed without the use of a formally structured process.

Schindler and Eppler (2003) conducted action learning research with nine multinational companies and also found that there is a “great discrepancy” between the need for project debriefing and its actual deployment in practice. Additionally, in a review of several empirical studies conducted in IT project environments, Disterer (2002) notes that “Project information is rarely captured, retained, or indexed so that people external to the project can retrieve and apply it to future tasks.”(p. 513)

In a study of 19 firms in project-based industries, Keegan and Turner (2001) found that all the companies in their study “without exception” had lessons learned policies in place to capture learning from projects once completed. Yet even though policies were in place to hold the reviews, it rarely happened. Worse, the authors found that “in no single company did respondents express satisfaction with this process” (p. 90).

Barriers to Cross-project Learning

A review of the cross-project learning literature has yielded three important themes that represent barriers to the effective use of lessons learned practices and cross-project knowledge transfer. A description of each of these themes follows.

The first barrier to effectively deploying lessons learned practices relates to what’s actually stored on corporate intranets and knowledge management systems upon project closure and over the course of the project. Traditional project management practice typically involves checkpoints to review “deliverables” produced by the project team for the purpose of meeting a project’s specific objectives (Kerzner, 2006; Newell, Bresnen, Edelman, Scarbrough, & Swan, 2006). Because project reviews and the completion of project work in general are highly focused on the production of deliverables, they are the artifacts most often made available for sharing (Newell, 2004).

The problem is that project deliverables in and of themselves are project specific, lack context, and may be difficult for others to adapt and apply to future projects. This relates to the nature of process knowledge versus product knowledge, which will be further discussed below.

The second major barrier to the effective deployment of lessons learned practices is project members' fears related to publicly "airing mistakes" or being blamed for problems that occurred on the project (Disterer, 2002; Prencipe & Tell, 2001; Schindler & Eppler, 2003; Zedtwitz, 2003). For example, in a study of 20 project management organization executives and how they facilitate cross-project learning, Julian (2008) found that leaders intervene to facilitate reflection on past project experiences most often when there's a problem – when the "traffic light" status report indicates a red light. Under these "red light learning" conditions, "blamestorming" can occur, creating an environment rife with distortions and defensiveness, thus undermining the organization's ability to learn effectively from past project experience.

The third major barrier found in the cross-project learning literature relates to the tendency to defer learning and reflection activities, if they occur at all, until the close of the project (Ayas & Zeniuk, 2001; Disterer, 2002; Keegan & Turner, 2001; Schindler & Eppler, 2003; Skovvang, Christensen, & Bang, 2003; Zedtwitz, 2003). Keegan and Turner (2001), for example, claim that learning "in a reflective manner throughout projects is damaged by [traditional lessons learned] practices that exist to defer learning until projects are completed" (p. 93). This is also confirmed by Julian (2008), who reports that 20% of the project executives in his study expressed deferral of reflection as a barrier to cross-project learning.

Enablers of Cross-Project Learning

Despite the problems associated with lessons learned practices, two themes have emerged as factors that appear to enable cross-project learning. First, it is clear that social practices, including narration and joint work among communities of practitioners, appears to be more effective than technology-based approaches involving storage, access and retrieval (Antoni, Nilsson-Witell, & Dahlgaard, 2005; Bresnen et al., 2003; Newell, 2004; Newell et al., 2006; Newell & Swan, 2000; Prencipe & Tell, 2001). Even where technology is involved, organizational members tend to consult with trusted colleagues first in order to identify information that may be useful (Bresnen et al., 2003; Newell et al., 2006). Newell et al. (2006), for example, found that “the most widely cited mechanism facilitating cross-project knowledge transfer was through senior managers, who were responsible for larger programmes, serving as the conduit” (p. 174). The importance of the brokering role played by senior managers, the authors claim, stems from their broad perspective as well as their hierarchical position. As one interviewee noted, “the people that review the project frequently review many other projects and they can pass that information on to other teams.” (p. 174).

Project Management Office (PMO) leaders are an example of executives who are in an organizational role responsible for overseeing multiple projects. Julian (2008) has found, for example, that PMO leaders can be viewed as knowledge brokers who facilitate connections among multiple communities in order to create and transfer learning from one project to the next.

The second enabling factor emerging from the cross-project learning literature is the conceptual difference between process knowledge and product knowledge (Antoni et

al., 2005; Bresnen, Goussevskaia, & Swan, 2005; Newell et al., 2006). Process knowledge, in the context of cross-project learning, relates to processes that a team may have deployed to achieve their goals and includes the reasons why these processes were effective or why they were not (Newell et al., 2006). Process knowledge can be distinguished from “product knowledge,” which the authors define as “knowledge about what had actually been achieved in relation to the stated goals or objectives” of a project (p. 175).

Newell (2004) claims that process knowledge, although more difficult to transfer, may be more useful to other project teams as it “is likely to involve much less technical content and so will be easier for others to absorb” (p. 18). She goes on to say that “...learning from [process knowledge] may enable a team in another project to complete their own tasks more efficiently and effectively” (p. 18). Similarly, Antoni et al. (2005) claim that process knowledge “...can become a practice that can be applicable to most projects most of the time,” whereas product knowledge “can vary significantly by application area” and is therefore less useful for a broader audience (p. 880). This may explain the problems associated with the lack of usefulness of project deliverables stored on corporate intranets.

Recommendations for Knowledge Management Professionals

Given the barriers and enablers found in previous research related to cross-project learning, the question now turns to what knowledge management professionals can do to help their organizations learn from past project experiences. Five recommendations are offered, each of which is aimed at fostering conditions more conducive to productive reflection and effective knowledge transfer.

Recommendation 1: Focus on accumulating social capital across multiple communities by establishing a network of strong relationships built on trust, professional development and mutual understanding. As knowledge creation and sharing requires the appropriate attention and focus among project teams, it is essential that knowledge management leaders build a strong network across communities in order to enlist support and negotiate effective knowledge management practices. Given the likely pervasiveness of defensive routines and their confounding effects on reflection and learning, it is necessary to gain the trust of organizational members by emphasizing professional development over more punitive approaches and by understanding needs of each community and their members rather than imposing practices that demonstrate a lack of understanding of their unique requirements.

Recommendation 2: Focus equal emphasis on learning from successful projects as those that appear to have failed or run off-course. If formal learning practices are continually focused on poorly performing projects, the organization risks enculturating learning practices as a punitive endeavor, making engaging in this process a less-than-appealing prospect for organizational members. Moreover, if learning practices are primarily focused on troubled projects, then the improvements that result in the form of organizational routines may be distorted towards eliminating risk and establishing tighter controls to prevent such problems from recurring. This may shackle future project teams with burdensome processes that limit their innovative potential. It is recommended that knowledge management professionals and other facilitators of organizational learning actively engage successful project teams in formal learning practices not only to make the

learning process more effective and engaging, but to discover the reasons why projects succeed so this knowledge can also be embedded into future project routines.

Recommendation 3: Reflect over the course of the project rather than just at the end. Performing lessons learned sessions upon project completion is a useful way to uncover learning from the project overall. However, project teams may not have recorded learning as the project progressed. For projects that last for months or years, project members will clearly have difficulties surfacing memories about the ways in which they solved problems over the course of the project, making the learning generated in lessons learned sessions highly selective and potentially less than useful for future teams. It is recommended that PMO Leaders actively promote formal reflective processes throughout the course of projects. This can be accomplished in a variety of ways at a variety of levels. For example, project members may be encouraged to maintain a personal journal to capture their thoughts and emotions along the way. Further, project status meetings can be improved by including updates not just on milestones and deliverables, but also on the processes the team used or did not use to get those results.

Recommendation 4: Provide useful process knowledge to project teams by asking “why” questions in lessons learned sessions and embedding stories and examples from past project experiences into standard methodologies and templates.

Most lessons learned practices focus on “what worked and what didn’t” with respect to past project activities. It is recommended that these reflective questions be supplemented with the question “why” something worked or why it did not. This may generate more useful knowledge for not only the project team reflecting on the experiences, but for prospective project teams who need to heed this advice on future projects. Asking “why”

can evoke richer, contextual information about why the practice worked or did not so future project teams can make informed choices about their planned approaches. This richer, contextual information may also be accompanied by what was formerly tacit knowledge on the part of the originating project team, making this knowledge more accessible to the organization.

Recommendation 5: Establish conditions more conducive to productive reflection in lessons learned sessions by utilizing a skilled facilitator and focusing on processes rather than people. Lessons learned sessions can be dominated by defensive routines which can distort the reflective process and block learning at the project level. The “lessons” that result may therefore not represent the true experiences of project teams, further undermining the organization’s ability to continuously improve. It is recommended that knowledge management leaders provide a means for project teams to utilize a trained facilitator from outside the project team who can help the team uncover its tacit knowledge and provide conditions that foster equal participation so organizational members’ defensive routines do not dominate the session. A skilled facilitator from outside the team can help the group avoid “blame-storming” and focus on the processes by which they achieved their outcomes rather than focusing on the performance of specific individuals, thus creating an atmosphere less conducive to defensiveness, blame or individual heroics.

Author Bio

Dr. Julian is an operations & technology strategist with seventeen years of experience helping blue-chip clients improve operational performance. His work focuses on engaging project managers and teams in the development of project performance improvements that enable their organizations to deliver mission-critical business transformation strategies faster and more effectively. He is a former six sigma master black belt, holds a BS in Industrial Engineering and Operations Research from Columbia University, an MBA from the University of North Carolina, Chapel Hill and a doctorate in Adult & Organizational Learning from Teachers College, Columbia University. He can be reached via the web at www.julianadvisory.com or via email at Jerry@Julianadvisory.com.

References

- Antoni, M., Nilsson-Witell, L., & Dahlgaard, J. J. (2005). Inter-project improvement in product development. *The International Journal of Quality & Reliability Management*, 22(8/9), 876.
- Ayas, K., & Zeniuk, N. (2001). Project-based learning: Building communities of reflective practitioners. *Management Learning*, 32(1), 61.
- Bresnen, M., Edelman, L., Newell, S., Scarbrough, H., & Swan, J. (2003). Social practices and the management of knowledge in project environments. *International Journal of Project Management*, 21(3), 157.
- Bresnen, M., Goussevskaia, A., & Swan, J. (2005). Organizational Routines, Situated Learning and Processes of Change in Project-based Organizations. *Project Management Journal*, 36(3), 27.
- Darling, M., Parry, C., & Moore, J. (2005). LEARNING IN THE THICK OF IT. *Harvard Business Review*, 83(7), 84.
- Disterer, G. (2002). Management of project knowledge and experiences. *Journal of Knowledge Management*, 6(5), 512.
- Gulliver, F. R. (1987). Post-Project Appraisals Pay. *Harvard Business Review*, 65(2), 128.
- Julian, J. L. (2008). How Project Management Office Leaders Facilitate Cross-Project Learning and Continuous Improvement. *Project Management Journal*, Fall 2008.
- Keegan, A., & Turner, J. R. (2001). Quantity versus quality in project-based learning practices. *Management Learning*, 32(1), 77.
- Kerzner, H. (2006). *Project management best practices : Achieving global excellence*. Hoboken, N.J.: John Wiley & Sons.
- Kotnour. (2000). Organizational learning practices in the project management environment. *The International Journal of Quality & Reliability Management*, 17(4/5), 393.
- Marsick, V., & Watkins, K. (1999). *Facilitating Learning Organizations: Making Learning Count*. Hampshire: Gower.

- Newell, S. (2004). Enhancing Cross-Project Learning. *Engineering Management Journal*, 16(1), 12.
- Newell, S., Bresnen, M., Edelman, L., Scarbrough, H., & Swan, J. (2006). Sharing Knowledge Across Projects: Limits to ICT-led Project Review Practices. *Management Learning*, 37, 167-185.
- Newell, S., & Swan, J. (2000). Trust and inter-organizational networking. *Human Relations*, 53(10), 1287.
- Owen, J., Burstein, F., & Mitchell, S. (2004). Knowledge Reuse and Transfer in a Project Management Environment. *Journal of Information Technology Cases and Applications*, 6(4), 21.
- PMI. (2004). *A Guide to the Project Management Body of Knowledge*. Newtown Square, PA: Project Management Institute.
- Prencipe, A., & Tell, F. (2001). Inter-project learning: Processes and outcomes of knowledge codification in project-based firms. *Research Policy*, 30(9), 1373.
- Prusak, L. (1997). *Knowledge in Organizations*: Butterworth-Heinemann.
- Rad, P. (2001). Is your organization a candidate for project management office (PMO)? *AACE International Transactions*, PM71.
- Raelin, J. A. (2001). Public reflection as the basis of learning. *Management Learning*, 32(1), 11.
- Schindler, M., & Eppler, M. J. (2003). Harvesting project knowledge: A review of project learning methods and success factors. *International Journal of Project Management*, 21(3), 219.
- Skovvang, K., Christensen, & Bang, H. K. (2003). Knowledge management in a project-oriented organization: Three perspectives. *Journal of Knowledge Management*, 7(3), 116.
- Zedtwitz, M. v. (2002). Organizational learning through post-project reviews in R&D. *R & D Management*, 32(3), 255.
- Zedtwitz, M. v. (2003). Post-project reviews in R&D. *Research Technology Management*, 46(5), 43.

