Chapter 6

A Model for Evidence-Based Learning through Lesson-Learning Systems: Examples from the Oil and Gas Sector

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ABSTRACT

A model for evidence-based learning is presented, consisting of a series of steps: observation, insight, learning, action assignment, validation, and change. This model is applied at a number of different scales within the oil sector. Firstly, team learning uses After Action Reviews to learn within project teams. Discussions take place within the team, and any changes are to team processes. A more complex form of learning is learning from one project to another, using facilitated lessons-identification meetings. Lessons are collected, actions are assigned, and changes made to organizational processes. Finally, in analyses of major incidents, an investigation team is tasked with collecting observations, insights, learnings, and even recommendations for action. The same workflow and the same development process can be seen for lessons, but the degree of rigor and the attention to governance varies.

INTRODUCTION

The subject of lessons-learning is a topic of great interest to all oil and gas companies; the small independents, the national oil companies, the large drilling, construction and engineering contractors, and the well-known super-major companies such as Exxon-Mobil, Shell, Conoco, BP. Oil and gas exploration and production is a business that requires huge investment, technological innovation, and extremely complex project management. It is often carried out in hostile parts of the world such as the polar regions, deserts, and in the deep oceans. The companies involved cannot afford to make any mistakes, let alone repeat mistakes, and must constantly seek to learn from their experiences, both successful and unsuccessful. Where mistakes lead to harm to individuals or the environment, the public scrutiny of these mistakes can be intensive.

DOI: 10.4018/978-1-4666-6453-1.ch006
This chapter looks at some of these approaches to lessons-learning at various different scales within the sector; from the scale of a small team learning about their own performance and applying their own lessons, through the scale of projects learning from the lessons and experiences of other projects, to the largest scale; that of an entire organization seeking to learn from a major incident. In each case, lessons are identified through discussion and investigation, and pass through a series of stages, from context to observation to insight to lesson. If the lesson is to be truly learned (in other words, embedded into new ways of working), then there are further stages. The lesson must be documented and validated, it must lead to assigned actions, those actions must be disseminated to the correct people through a lessons management system, the appropriate actions must be taken, and the lessons closed. Then, if the organization wishes to ensure that this learning happens sooner and is managed an effective way, the whole process must be monitored, tracked and reported on.

The objective of this chapter is to show this “lesson lifecycle” as it is applied at a number of scales within the oil sector. The material for this chapter was gathered, and the models developed, during the author’s involvement in lesson-learning in the oil sector and many other industrial sectors, first as an oil-company employee with accountability for lesson learning and knowledge management (1992-1999) and more recently as a Knowledge Management consultant.

BACKGROUND

The oil and gas business is a global, highly competitive, and knowledge-intensive business with high level of scrutiny of performance. This scrutiny is brought to bear upon economic performance in terms of the cost of projects, time performance in terms of the delivery of projects, and safety and environmental performance in terms of injuries, fatalities, oil spills and other environmental damage. Knowledge Management and lesson-learning have been for many years topics of great interest for the oil and gas companies and their major contractors. The oil and gas industry is consistently recognized in the global MAKE (Most Admired Knowledge Enterprise) awards, as published on the KNOW network website (The KNOW network, 2014) including major international oil companies such as ConocoPhillips and Royal Dutch Shell, national oil companies such as EcoPetrol and Petrobras, and service companies such as Schlumberger.

There are at least five reasons why knowledge management and lesson-learning are important in this sector. Firstly, the oil business is a global business, and the elements of the business tend to be the same wherever you go. An oil platform on the Northwest shelf of Australia is not that different from an oil platform in the North Sea, and a refinery in Singapore is not that different from a refinery in Texas. The tasks that a service company will perform are the same, regardless of the client and the country. The challenges that the business faces are therefore common challenges, and solutions and lessons need to be shared and applied around the globe.

Secondly, the oil business is a highly competitive business. There is no true differentiation in product - the tank of gasoline that you buy from Texaco is essentially no different from the tank of petrol that you buy from Exxon, so the companies are not competing on product quality. They are not really competing on technology either. Drilling rigs are leased from contractors, refineries are much the same the world over, and so are gas stations. Instead the competition is all about the application of technology, the use of knowledge, and the efficiency of operations.

Thirdly, there is a very strong performance drive, and clear metrics. A project engineer or a driller on a drilling rig knows when they have done a good job, because the results are measurable. The company can measure how many feet they drilled that day, how many barrels they produced
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