Rethinking Lessons Learned Processes

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Abstract. Lessons learned are one way to retain experience and knowledge in project-based organizations, helping them to prevent reinventing the wheel or to repeat past mistakes. However, there are several challenges that make these lessons learned processes a challenging endeavor. These include capturing knowledge about project management, allowing learning from mistakes, and handling the group processes within the project team. We introduce a novel approach combining elements from storytelling, root cause analysis, and collaboration engineering to address these challenges, and report on first experiences utilizing this approach in a project in the oil and gas industry.

Keywords: Lessons Learned, Root Cause Analysis, Storytelling, Collaboration Engineering, Knowledge Management, Organizational Learning.

1 Introduction

Within project based organizations (i.e. organizations structured around projects) there is some concern over retaining the knowledge and experiences gained in a project. Failure to learn from past projects can lead to repeating errors (Ajmal et al., 2010) or reinventing the wheel. In extreme cases, project based organizations fail to learn from their mistakes for years on end (Ajmal et al., 2010).

Some organizations address this challenge by transferring some of the knowledgeable people, such as engineers or project managers, from one project to the next. These knowledgeable people could carry some of their learning with them. However, the number of projects that can be reached this way is rather limited. In addition, knowledgeable people use their minds. Thus, they own their means of production - when they leave the organization, they take this means of production with them (Stauffer, 1999), depleting the organization of valuable knowledge.

As a result, project based organizations aspire to capture the knowledge and experiences gained in a project. Here, lessons learned are a common strategy to transfer knowledge between projects by gathering lessons and storing them (e.g. in a database) for others to use.

This paper reports on action research, where lessons learned were gathered from a project in the oil and gas industry. The action research strives to address three challenges: capturing knowledge about project management, allowing learning from mistakes, and handling the group processes within the project team. We report on the approach taken to address these challenges, and present some first results.

2 Three Challenges

There are several reasons that make lessons learned gathering a challenging endeavor, see e.g. Newell et al. (2006), Kasi et al. (2008) for an overview. In this paper, we focus on three of these challenges.

First, the knowledge gained in a project covers a wide range of areas. For example, in the construction industry, relevant knowledge can relate to areas such as design, contracting, planning, or operation and maintenance, but also to project management (Tan et al., 2010). Knowledge about project management encompasses e.g. team building, communication and stakeholder management, and risk management (PMI, 2004). Thus, relevant knowledge is not just about technical issues, but also about
‘softer’ topics such as social interactions and building commitment. Not all of these knowledge areas are regularly covered by lessons learned efforts. Newell et al. (2006) have conducted interviews in several organizations on the effectiveness of their lessons learned efforts. The results of the interviews are telling. While it seems to be possible to capture knowledge about products, technical issues and achievements, softer types of knowledge (i.e. knowledge about the processes that a team had deployed to achieve their goals and why these processes seemed to have worked well or badly) are not retained. One reason for the difficulties in retaining softer types of knowledge/ process knowledge lies in the tacit and situated nature of part of this knowledge (Kasi et al., 2008). It is therefore difficult to capture and transfer (Neuweg, 2006). For organizations relying on the execution of projects this draws a bleak picture. Learning from projects and exchanging both explicit and tacit knowledge beyond the boundaries of a project has been identified as one of the critical success factors for projects (Cooke-Davies, 2002).

Second, learning from mistakes can be a challenge in itself. Here, organizational culture often creates barriers to learning from mistakes. The open and honest productive culture that would facilitate the articulation and analysis of errors is rarely present in most project-based organizations (Ajmal et al., 2010), leading to a lack of psychology safety (Kasi et al., 2008), especially if the project manager plays an important role in how well or badly a project performed. In addition, the process of learning from mistakes can involve re-experiencing the past, thus creating frustration and anger (Kasi et al., 2008).

Both challenges are made more difficult by the fact, that learning and experiences are spread in the project team. With regard to softer types of knowledge, different team members often hold only part of the puzzle. While the project manager might know why something was implemented, and can outline the motivation and actual effects on a high level, others might have detailed knowledge on how something was implemented. Both types of insights are important when it comes to lessons learned. In addition, groups remember more correct information about an incident (see e.g. Hogg, Vaughan, 2008). Overall, groups have a greater amount of knowledge, intelligence and understanding of a problem than any single individual (French et al., 2009). Thus, involving key team members in the lesson learned process might lead to better results. However, gathering lessons learned in a group can suffer from well-known group phenomena such as groupthink (see e.g. Hogg, Vaughan, 2008). Thus, handling the group process adequately is a third challenge.

There are only a few studies addressing similar issues in the context of lessons learned. Most studies just state that facilitators should be used and state the method ‘discussions’ in the group for actually gathering lessons learned (see e.g. Koners (2005), Liebowitz (2008)). Williams (2004) provides more details on his process. He uses a root cause analysis to analyze the management decisions leading to failure. However, he did not consider any group processes. Baas et al. (2010) utilize appreciative enquiry to address the challenge on how to design the lesson learned process in such a way that participants don’t see it as such a negative experience. This way they balance reflection on mistakes with more positive experiences, but they do not explain how to actually create good lessons learned from mistakes.

3 Research Case and Approach

This paper reports on gathering lessons learned from a project in the oil and gas industry. The project involved multiple stakeholders, among others a client organization and a contractor handling the management and engineering part of the project. The project team regarded the project as not successful in terms of budget and schedule. Several team members stated that at least one of the project managers played a major role in that situation. Thus, the project presented an opportunity to research how to capture knowledge related to project management (including stakeholder management), and to explore capturing knowledge related to failure.

Using an action research approach, we conducted a series of interviews with key members of the project team and a facilitated workshop to identify, discuss and capture the major lessons learned related to project management.

We recorded all the interviews and the workshop and gathered further data utilizing a questionnaire and debriefing rounds. In particular, we used the questionnaire to assess the perceived effort, and satisfaction with different parts of the process. Debriefing rounds after each step in the workshop and after the workshop as a whole provided feedback as well.
The project managers were involved in how the project was conducted. This made it necessary for an external party to guide the lessons learned effort. In addition, the client organization wanted to improve their lessons learned efforts, thus leading to an opportunity for action research. Altogether, seven people contributed lessons learned during the process. From the client organization one engineer, two project managers, and one portfolio manager participated. From the contractor’s side, there were one project manager and one engineer, as well one person responsible for managing the project manager within their organization.

4 Lessons Learned Process

The lessons learned process employed in this project consists of two major phases: an interview phase and a workshop phase.

The interviews utilized mechanisms from storytelling (see e.g. Lukosch et al., 2011) and root cause analysis (see e.g. Williams, 2004) to gather “softer” kinds of knowledge about project management. Storytelling is a method to capture experiences, personal perceptions, and insights through stories. In the context of this action research it was embedded in semi-structured interviews and used to gather the personal perception of team members on what went well and what went wrong. The main causes for failure were elicited in the same interviews, asking each team member recursively what they considered the cause for what went wrong (“why”), what they would recommend to address this cause, and whether the recommendation would be able to prevent the ultimate effect. Most of these recommendations had not been tested in this project.

Altogether about 10 hours of interview material were gathered. This interview material was transcribed and analyzed, resulting in a preliminary report. Here, most lessons learned consisted of a description of the problem or situation, and a recommendation on how to handle this problem. The report contained 31 problem descriptions.

In order to bring the separate views together, and to allow the interviewees to refine and reflect upon the gathered lessons learned, a facilitated workshop was conducted. The workshop utilized a group support system in order to allow the participants to work anonymously and in parallel.

The workshop was designed using ThinkLets (see e.g. Briggs, Vreede (2009), Briggs et al. (2006)). ThinkLets are abstracted basic units (steps) of a facilitated group processes, describing the actions of the facilitator and of the group as well as expected outcomes, the purpose, and pitfalls.

As a first step, the participants clarified the problem statements, and were given the opportunity to challenge the recommendations or to add new recommendations (using the LeafHopper ThinkLet with problem statements and recommendations as seeds).

In the next step, they tagged the problems to make it easier to retrieve the lessons learned from the database. An internal framework for describing risk categories was given as an initial set of tags. In addition, the participants could add free tags. On average, each problem description received 2.6 tags.

Third, the group members rated the problems (using the MultiCriteria ThinkLet) on a 5 point scale with regard to their relative importance for their project, the impact should a problem occur in a future project, and probability of a problem occurring in a future projects. The rating criteria impact and probability of (re-) occurring are also used in risk assessment (see e.g. Hillson and Simon, 2007). The results of these ratings give an indication to the reader of a lesson learned, how important this lesson was in the context of the project, and in the context of the organization. Figure 1 shows a scatterplot depicting the problems. The participants consider the problems to be severe and likely to reoccur in other projects. The outliers in the scatterplot can all be explained by some misunderstandings regarding the usage of the voting system.
5 Conclusions

Results from this action research indicate, that the interviews together with an (anonymous) workshop address the complex situation of the project and allow team members to address sensitive issues in the project, such as team building. An initial analysis of the questionnaire revealed that the perceived effort is adequate, and that the participants show a high satisfaction with the process. The debriefings during and after the workshop also showed that the workshop design needs some refinement.

The high ratings regarding impact and probability of reoccurring can be interpreted in two ways. First, they could indicate that during the process an early filtering took place. Consequently, lessons that are considered unimportant are not mentioned at all, thus leaving out important lessons learned. Second, the ratings could indicate that the lessons learned process focused only on lessons learned of high relevance without leaving out other important lessons. This position is supported by the fact that during the workshop no new problems were added. However, to assess whether this explanation actually holds further research is needed.

Another avenue for future research links to risk assessment. The employed lessons learned process already contains elements that are also part of risk assessment. Collier et al. (1996) proposed to use lessons learned as input for risk identification. However, to our knowledge this suggestion has not been taken up. Thus, our lessons learned process could contain first steps in linking lessons learned processes to risk identification.

References


