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TEAM LEARNING IN SPACE PROJECTS - INSIGHTS FROM A SMALL SATELLITE INTEGRATOR

Abstract

Learning is seen as a social or human aspect of knowledge creation and management in organizations. Learning in the workplace does happen on various levels such as collective and individual level or on short-term, medium-term or long-term level. It is not yet fully understood how learning happens in the workplace and how it can be facilitated as part of a knowledge management strategy. The paper contributes to an improved understanding of workplace learning in presenting an empirical study of a team that designs and builds small satellites. The activity of interest for the study is the long-term learning of the team from their first common project experience. The focus of the paper is on a one year period between the later phases of the first project and the start of the second project.

The paper is focusing on two main questions: How does the team learn? What does the team learn? Activity theory and expansive learning theory provide the conceptual framework to identify and analyze the learning activities of the team. Elements considered in an activity-theoretical analysis are: means for performing the activity, the division of labour, the rules and regulations of the workplace, the subjects, and the community. Expansive learning focuses on the transformation and creation of the learning culture itself. It is realised through a cycle of seven learning actions and starts with questioning current practice, analysing and modelling new solutions, examining and implementing a new model. The cycle closes by reflecting on the process and consolidating the new practice.

The research draws on several data sources. Documents and emails inform about distant communication and the background of team members. The first author acted as participating observer. His project journal provides descriptions of the team activities from a team member perspective. Audio recordings and notes from workplace activities complement the data.

The contradictions between the elements of the activity system are seen as the driving force of team learning, and hence the trigger for learning of the team. The research identified the quality and product assurance approach for cost effective space projects as a major contradiction driving the learning cycle. A partial expansive learning cycle comprising learning actions from questioning current practices to the implementation of new models is described in the analysis.

The paper describes the conceptual framework and details of the study and presents evidence gathered for learning of engineering teams, in particular expansive learning.