

Ad Hoc: Supporting Task-oriented Teaching and Learning under Time Pressure

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Abstract: Teaching and learning are generally seen as conscious processes. At work these processes are rather unconscious: Experts don't have time to provide their know-how in a structured and advisory form. And novices just want to get information that is necessary to accomplish tasks fast and efficiently. The objective of this thesis is to support task-oriented teaching and learning under time pressure with systems. The systems integrate learning, work, and knowledge spaces. Ad Hoc Systems will be implemented and evaluated in case studies. The results will show the applicability of the Ad Hoc concept.

Keywords: Ad Hoc Learning, Technology-supported Workplace Learning, Just-in-Time Learning, Learning-on-demand, Knowledge Management, Communities of Practice

1 Introduction

At the work place, teaching and learning processes are constantly present when interacting with colleagues and performing tasks. Lave and Wenger (Lave, 1991) have analysed five master-apprentice learning situations and defined that situated learning is mainly:

- a situated activity with a present context and
- located in the process of participation in communities of practice

At work this conception of learning is present and takes place between newcomers and old-timers. But an obstacle to efficient learning and teaching processes is time pressure. Experts lack the time to provide and share their gained know-how in a structured and advisory form, which novices would need for adopting to their tasks fast and doing their jobs efficiently.

This doctoral thesis will focus on the Ad Hoc problem (Lindstaedt, 2002). A concept for supporting Ad Hoc Teaching and Learning will be designed and evaluated in case studies.

2 Related Work

Knowledge Management is an organisational approach for coping with always faster developing processes in today's industry and organisations. It

focuses on knowledge creation, application, and sharing – processes which include unconscious teaching and learning.

Just-in-Time learning (Riel, 1998), Learning-on-demand, and work-process-oriented training (Rohs & Mattauch, 2001) are approaches for training employees at their work fast and efficiently.

Ad Hoc Systems combine knowledge management with workplace learning. They are based on already present collaboration and knowledge management infrastructures. Ad Hoc Teachers' requirements are regarded as important as Ad Hoc Learners' ones.

3 Research Proposal: The Ad Hoc System

The objective is to support Ad Hoc Learning by integrating work spaces, learning spaces and knowledge spaces with a system. The spaces with their resources and structures are shown in Figure 1 and are analyzed in the following.

3.1 Work Space

The work space is the user's desktop PC and it is the place, where the Ad Hoc System is used. It consists of computer programs used for office work and engineering. The structure is given by work pieces and processes that describe the actions to be taken from raw to finished items. The Ad Hoc System is either

integrated in the work processes or represents the work context. Exemplary work results, templates, checklists, and How-To descriptions can be added easily and fast, because providing the context is not required. Ad Hoc Learners - depending on their background knowledge - will possibly use only some checklist functionality or access the Ad Hoc System for in-depth guidance.

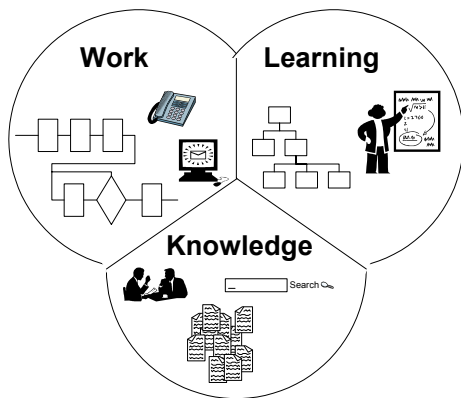


Figure 1: The Ad Hoc System – an integration of work, learning, and knowledge spaces

3.2 Learning Space

Computer Supported Collaborative Learning (CSCL) and E-Learning support conscious delivery and construction of knowledge. The objective is to give a good overview of certain disciplines. The learning space consists of topics and its knowledge is structured hierarchically.

Conscious Learning takes place when the Ad Hoc Learner familiarizes herself with a certain topic, either self-motivated or after she has been asked. Conscious Learning takes place in periods without time pressure, but is also an important aspect to be supported by Ad Hoc Systems.

3.3 Knowledge Space

The knowledge space consists of a vast amount of places inside and outside an organisation. Internal information sources, also known as the organizational memory, can be the intranet, shared network and E-Mail folders, and document and knowledge management systems where project documentation is archived and shared. External information sources are the internet in general, information databases, and archives of magazines.

A structure to this space cannot be applied. It is like a sea where one can just fish for knowledge items. Once having an appropriate item on the hook, it can be linked. The knowledge items itself have various forms. They can be glossaries, documents,

E-Mails, checklist, pictures, audio, video, and so on. Ad Hoc Teachers can set links to helpful resources. Ad Hoc Learners get provided with proper templates, links to information databases and examples of good work.

4 Case Study 1: Supporting Project Management

A case study is carried out in a research and consulting company for knowledge-based applications. Teaching and learning project management processes should be supported with an Ad Hoc System, having the following objectives in mind (Lindstaedt, 2002):

- Responsibilities of division management and project management should be decoupled
- Selected employees should be qualified to project managers with training-on-the-job
- Project management processes should be standardised

4.1 Preparatory Work

In workshops project management processes were modelled, roles defined, and responsibilities determined. Flow charts visualize tasks and their sequence. For each task the following information tokens are provided:

- a checklist
- e-mail and document templates
- a "How-To"-description
- a learning module
- references to literature and web resources

4.2 Implementation

The company uses a knowledge management system for their project work. This system provides shared E-Mail folders and workspaces for project documents. The Ad Hoc System will be integrated into this system (Figure 2). Project managers will be supported in the following way:

- Ad Hoc Teachers can easily add templates, new checklist entries, references to exemplary e-mails and documents without having to provide the surrounding context
- Ad Hoc Learners can access task-specific information, ranging from checklists to very detailed knowledge, depending on their background knowledge or available time.

4.3 Evaluation

The case study is accompanied by an initial and final survey in order to prove the Ad Hoc System's success. The survey investigates and compares:

- the perception of project management success factors,
- the application of project management knowledge, and
- project management success and failure stories

Additionally, the Ad Hoc Systems utilisation and access of information tokens are logged and evaluated too. Users, Ad Hoc Teachers and Learners, are asked for feedback about their satisfaction with the system.

5 Case Study 2: Integrating Ad Hoc Teaching and Learning into Knowledge Management Systems

The second case study is currently designed for a software company that offers document management, portal and e-learning solutions based on their own knowledge management system. The company is interested in the Ad Hoc concept and they want to:

- investigate its applicability to their product
- set up a reference system, fitting to the line, their customers come from

6 Status and Future Plans

The initial survey of the first case study has been finished. An Ad Hoc System for the Project Close-Out Process will be available by the end of May 2003. First user feedback will be collected in June. The implementation of the remaining project management processes will follow. Depending on the first results, case study 2 will be launched in July 2003.

The case studies will show the applicability of the Ad Hoc System. Based on the results a general concept will be designed. What has already been shown is that processes are a good way to provide the context for structuring Ad Hoc contents and combining the spaces. Results will further show where to refine and what makes sense to enrich the present concept with. Conceivable are collaboration support between Ad Hoc learners, personalization and/or automated context awareness.

The refined concept will be implemented and evaluated in second phase case studies. These results will be used for a final concept of Ad Hoc Systems, which will be submitted as the final thesis.

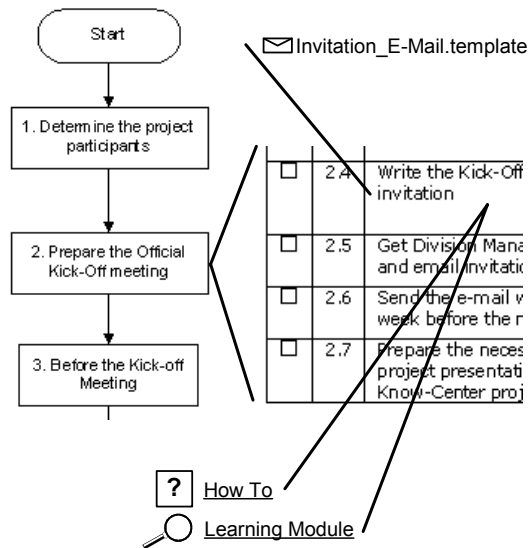


Figure 2: Case Study 1: Project Management

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