

Management of Situated E-learning in Organizations

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Abstract: Complex products and services require both the sophisticated knowledge of individuals on the one hand and collective collaboration between various disciplines and teams on the other. Work-related individual and organizational learning processes in organizations appear to provide the foundations for such individual and organizational knowledge and capabilities. These interconnected learning processes would also seem to be situated in both a social and a physical environment. This paper proposes a methodology for managing situated individual and organizational learning. Empirical results from a questionnaire and two test bed organizations are presented and conclusions drawn from the assessment results on recommended measures for the use of e-learning.

Keywords: organizational learning, e-learning, learning design, work-related learning, didactics

Categories: L.2.5

1 Introduction

1.1 Individual and Organizational Learning

Individual and organizational learning in the workplace are interconnected processes ([Kim, 93] [Schwaninger, 06]). They influence each other substantially and are difficult to differentiate. Since the late 1980s, literature has become available which recognizes not only the impact of the individual, but also the impact of the organization on individual learning processes and/or training success. Several authors in the Human Resource Development (HRD) field analyze organizational factors affecting work-related learning (e.g. [Chiaburu, 05b], [Chiaburu, 05a], [Russ-Eft, 02], [Gardiner, 99], [Confessore, 98], [Tannenbaum, 97]).

1.2 Situated Learning

To study the transfer of knowledge and skills in organizations, we must first clarify the *nature of such knowledge and capabilities*. From a mechanistic point of view, knowledge and capabilities can be regarded as easily transferable commodities. However, research findings suggest that the use of data and information in organizations depends on the subjective interpretation of those individuals and groups who transform this input into actions and results. Particular emphasis is given to this aspect in *situated approaches* to knowledge and learning [Lave, 91]. Within the situated approach, it has been proposed that companies must seek to influence and support knowledge management capabilities in several different areas (e.g. leadership and company culture) by deploying and integrating the available methods, instruments and technologies to provide a *beneficial environment* for the use and creation of knowledge and competencies. In doing so, they must also actively encourage and support participation in learning activities ([Poell, 04]). Since individuals can be seen as operating both independently and interdependently, their socially-derived personal histories, values and ways of knowing mediate the way they participate and learn in the workplace. They need to find meaning and value in the learning activities offered. Inconsistencies between *organizational and individual values* may lead to resistance to training. Different ways of motivating are required, for example, to attract the interest of and encourage the participation of reluctant employees. Opportunities to participate in the decision processes and learning activities as well as receive support for learning are essential for rich learning outcomes [Billett, 01].

Approaches like situated learning emphasize the *social context of learning processes* and regard knowledge as socially constructed [Lave, 91]. Working as such is recognized as a source of learning and informal learning does indeed occur in work processes. Consequently, a shift from training to learning can be observed in the field of HRD: “Learning arrangements closely linked to the workplace are at the center of attention, for example, mentoring, self-study, learning-by-doing, intercollegiate consultation, special work assignments, reflection-in-action, work-related learning projects, coaching, and work experiments” ([Streumer, 04], quoted in [Poell, 04]). An organization’s potential to provide a supportive learning environment depends very much on the way work is organized in that organization and on the actual work processes involved ([Ashton, 02], p. 160). Consequently, the complete working and learning context must be analyzed: “if we are to further our understanding of the process of workplace learning then we must move beyond a narrow focus on the process of interaction in the immediate workplace that has characterized recent research” ([Ashton, 02], p. 160).

1.3 Objective

The objective of our project is to define an empirically validated model of those organizational dimensions which have an impact on individual and organizational learning processes (Model of Organizational Dimensions - MOD). An assessment methodology based on this MOD supports the analysis of an organization’s learning situation. The results of such analyses serve as input and provide decision support for

didactic strategies and management measures. This particular paper focuses on decision support for the application of e-learning.

2 Methodology

Based on an initial literature based version of the MOD, a questionnaire – the Learning Assessment Guideline (LAG) – was developed ([Pircher, 07], [Pircher, 06]). The LAG assesses the organizational factors relevant for individual and organizational learning. Research findings from the fields of HRD and Organizational Learning/Knowledge Management (OL/KM) were used to generate an initial item pool. The design and evaluation of the LAG in the chosen test environments was spread over two empirical phases. In the first phase, face-to-face and written interviews with managers provided information relevant to the implementation of process-oriented learning with a focus on the management perspective. Results from these interviews were used in the second phase to develop an online survey to gather information on the employee perspective on workplace learning.

A pool of 129 items was developed based on both the literature review and the interviews with managers. A subsequent online survey was conducted in January and February 2008 using this item pool. Overall, 191 employees from 5 different organizations completed the LAG. 30 of these respondents were subsequently excluded as their responses were incomplete. The actual data obtained was used to analyze the structure of the questionnaire and select appropriate items with good test statistics.

Orthogonal factor analysis with Varimax rotation revealed seven factors (accounting for 57 % of the overall variance). To reduce the complexity of the factor structure, items loading substantially on more than one factor were excluded. Within each factor, a reliability analysis was conducted for the remaining items. Items which correlated with a factor score of less than .30 were successively excluded.

3 Learning Assessment Guideline

The final scales exhibited satisfactory reliabilities (Cronbach's Alpha) between .64 and .92. Consequently, the final version of the LAG contains 57 items relating to 7 factors: organizational learning orientation (OLO, 21 items), e-learning orientation (ELO, 9 items), problems with prior work-based training courses (PPT, 7 items), extrinsic motivation for work-based training courses (EMT, 7 items), workload (WL, 5 items), work-orientation of training courses (WOT, 4 items), and face-to-face learning orientation (FLO, 4 items).

To further validate the organizational nature of the dimensions assessed by the LAG, intraclass correlations (ICC) were computed for each scale on an organizational level. High intraclass correlations indicate very similar scale values within an organization. This analysis confirmed that the LAG assesses predominantly organizational factors: OLO, ELO, WL, and WOT are significantly correlated within the organization. EMT is correlated within organizations, but did not gain significance due to the sample size. Interestingly, PPT and FLO seem to feature more on an individual than on an organizational level.

4 Empirical Results from Two Organizations

To visualize the assessment obtained using the LAG, data from two organizations, one from the telecommunication sector and one from the healthcare sector, was further analyzed and compared. 20 employees from the telecom company (mean age = 37.42 yrs, mean length of service in company = 5.83 yrs, 11 % management) and 25 employees from the healthcare company (mean age = 43.25 yrs, mean length of service in company = 17.26 yrs, 27 % management) completed the questionnaire. As the descriptive characteristics of both samples show, these companies differ greatly both in employee age and frequency of employee change. Despite these descriptive differences the two companies are fairly similar in many of the LAG scales (WL, EMT, FLO, PPT, WOT, cp. Fig. 2).

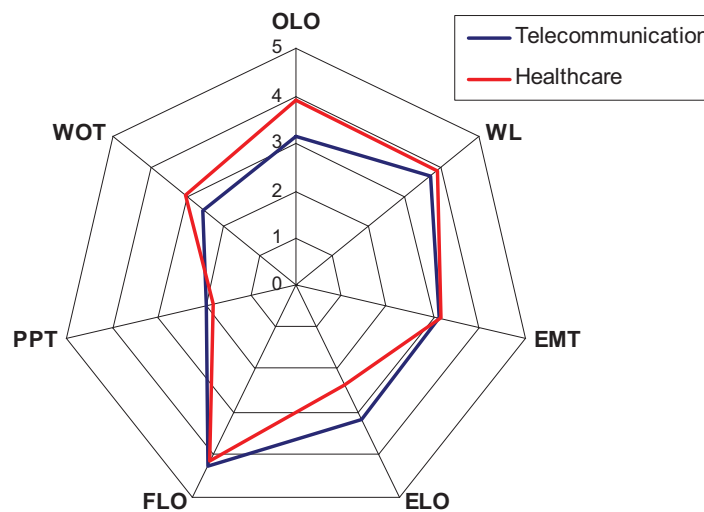


Figure 1: Assessment results from the telecommunication and healthcare sectors

However, the comparison also shows substantial differences in three scales. Results for the healthcare organization, for instance, show a higher degree of organizational learning orientation (OLO). In contrast, the telecommunication company has a higher e-learning orientation (ELO).

A comparison of the LAG values for each of these two companies with other organizations shows that the healthcare company has a significantly lower e-learning orientation, but a higher overall organizational learning orientation and fewer problems with prior training courses. The telecommunication company has a lower extrinsic motivation than other companies.

5 Decision Support for the Application of E-Learning

There is still a lack of research on the correlation of organizational characteristics and suitable didactic measures. However, based on our literature survey and analysis, a number of factors were identified which appear to be linked to this issue. Through the empirical work carried out in the EU project PROLIX (Process oriented learning and knowledge exchange), we identified different factors relevant for e-learning in organizations. In the following section, we will discuss how each of the seven LAG factors relates to the introduction of e-learning and which management measures can be employed to improve these organizational characteristics.

A minimum prerequisite for the application of e-learning in an organization is a moderate *e-learning orientation (ELO)*. An e-learning orientation as assessed in the LAG means the availability of the required infrastructure and a sufficient level of IT skills among employees. If an organization's ELO is low, the introduction of e-learning should be delayed until these requirements are met. From a management perspective, the potential strategic benefit of e-learning should be analyzed in combination with work-based learning ("blended learning"). Strategic measures can be developed by focusing on the main advantages and challenges of e-learning.

Workload (WL) is also particularly relevant for e-learning. E-learning courses are often done at the workplace, so learning usually does not take place at a specified time, but when a person has some spare time to do so. People with heavy workloads have little time to participate in e-learning and often no time to transfer the individual knowledge gained to actual work processes for organizational learning purposes. The success of and participation in such training programs could be increased by a temporary reduction in workload. Management must ensure that participation in training activities does not have significant negative consequences for employees, such as substantially increased time pressure.

An *organizational learning orientation (OLO)* is a prerequisite for the success of all forms of work-based training. Individual learning will only have an impact at an organizational level if an organization is prepared to encourage its employees to make use of their newly acquired knowledge. In cases where the organization's OLO is low, management could take steps to improve the situation by developing employee competencies and explicitly encouraging employees through their line managers to participate in training activities (e.g. a "dual ladder" [van Wees 94] or "walk the talk" [Sveiby 07] approach). Another possible option would be to provide an overview of the available internal and external knowledge (e.g. Yellow Pages, Blue Pages) and the knowledge needed in the organization (competence matrix).

If an organization has already introduced different forms of training, the factors *problems with prior work-based training courses (PPT)* and *work-orientation of training courses (WOT)* provide information on the suitability of such training in that particular organization. A high PPT value indicates that training courses did not meet the expectations and requirements of employees and that a change of didactic strategy is recommended. In such cases, a first step would be to evaluate, for example, the qualifications of the trainers, assess the types of courses used and determine whether the prior knowledge of the employees fitted the requirements of the courses. A low WOT value indicates that training courses were not sufficiently work related and that employees did not find the training topics relevant to their particular work

requirements. Knowledge is not likely to be transferred if the training available is not work-oriented and employees are thus not intrinsically motivated or encouraged to do so by their line managers. To increase the WOT and the transfer of the material learned, the topics and didactic methods used should be adapted to better suit the working environments and tasks of the employees. If not, management should offer employees support in transferring the knowledge acquired in training courses to their actual work processes.

The factor *face-to-face learning orientation* (FLO) is not relevant for the introduction of e-learning. Employees are prepared (or not) for e-learning independent of their preference for face-to-face learning (or not).

Last but not least, the factor *extrinsic motivation for training* (EMT) indicates the extent to which an organization values the training efforts of its employees. Too few incentives may result in only those employees who are highly intrinsically motivated participating in training courses. While few incentives may be needed for voluntary e-learning because a high degree of intrinsic motivation is conducive to investing time and effort in learning on one's own at a computer, extrinsic incentives should nonetheless be provided for compulsory computer-based training courses. Such incentives will motivate employees to invest their time and effort in training and thus encourage individual and organizational learning. However, care should be taken not to offer overly high extrinsic incentives, as these could reduce intrinsic motivation.

By applying this decision support to the two organizations described above, the results of the LAG indicate that the learning environment at the telecommunication company is suited to e-learning: employees report a high level of ELO, thereby indicating that IT skills and the necessary infrastructure for e-learning are available. To increase employee motivation to participate in training and transfer their acquired knowledge to the workplace, the introduction of training incentives is recommended.

In contrast, the introduction of e-learning at the healthcare company cannot be recommended, due to the low ELO level. If e-learning were to be implemented in the future, the management would have to first improve its technical infrastructure and provide courses to raise the level of IT skills among its employees. However, the company does have a high overall OLO, which is beneficial for individual and organizational learning at the workplace. As only limited PPT were reported for this company, we recommend that it basically maintains its existing didactic strategy. Should the company plan to introduce e-learning, it should first weigh up the benefits against the costs.

6 Conclusions

The perception of learning as a situated process has been transferred here to a further objective, namely the strategic management of e-learning. On this basis, the specific organizational context of e-learning had to be analyzed and taken into account. A literature based model of relevant characteristics was tested empirically, resulting in an assessment that included 7 factors and 57 items. By means of example, we used the results for two separate organizations to demonstrate how an organizational learning environment assessment conducted using the LAG can provide decision support for the introduction of e-learning. By taking its specific characteristics into account, suggestions for appropriate management measures and didactic support can be

provided that enable an organization to define a training strategy specifically tailored to its own particular needs.

7 Future Work

A next step in our research will be to test and refine the decision support by implementing it in several organizations. The final version of the decision support will then be evaluated by training designers and managers in different organizations with regard to usability and practical relevance.

To date, the decision support only provides advice for “high” or “low” values on the LAG scales. To provide a quantitative threshold for both extremes in the seven factors, we plan to use the LAG in the test beds and other organizations to generate a large data pool for the LAG to serve as reference distribution.

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