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E-learning at Work: towards a participative approach

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ABSTRACT A case study focusing on learning outcomes from a web-based course and integration of new knowledge into work practices at the County Administration of Sweden is analysed. The study has a process-orientated longitudinal character combining different methodological approaches. The current work situation of the workers was studied using interviews. A questionnaire was distributed to the first hundred learners after they had passed the course. Telephone interviews were then made a month after the course. The respondents were more positive with respect to the usefulness of the course for their work immediately after completing the course, compared with their interview responses a month later. When they answered the questionnaire they also thought it was easier to get time for the course, than they indicated later in the telephone interviews. Likely reasons for this discrepancy are considered. The study shows the risk of obtaining inflated positive judgements of a course when the evaluation is made immediately following course completion. Instead, a process-oriented evaluation is recommended, evaluating both the work situation before the course, the comprehension of the course immediately after the course has been passed, and evaluation a month after the course has been passed. Although a majority of the learners had an overall positive judgement of the course, about half of them had not applied the new knowledge to their work, a month after the course. A participative approach with discussions in local work groups before and after the course, supported by local management, is proposed in order to facilitate integration of knowledge from the course into the work practices.

Introduction

In this article, an evaluation study of a web-based course with one hundred respondents at the County Administration of Sweden is taken as a departure for analysis and discussion about different organisational e-learning and evaluation approaches. The aim of the study was to conduct a process-oriented evaluation of a web-based course within a public administration unit, with particular focus on integrating aspects of new knowledge from the course into work practices. The course was developed by the County Academy of the County Administration of West Gotaland in Sweden.

Since the beginning of the 2000s this County Administration has made efforts to develop an organisation (the County Academy) for internally developed web-based courses. The County Administration of Sweden is divided into 21 separate county administrations located in different regions of Sweden. The County Administration of West Gotaland has about 650 employees dealing with about 150,000 cases each year. The organisation is divided into 16 different departments, each responsible for different specialised areas (such as environmental issues, social issues, etc). The handling officers in the organisation mainly have an academic background and needed continuous education in order to deal efficiently with matters within their different expert fields, contingent upon new regulations and laws from the government or new specialised knowledge within the expert fields. External education was seen as too expensive, and it was often also difficult to find

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proper educational programmes. Accordingly, the development of internal courses was seen as an alternative.

The author was a member of the project group for the development of the County Academy, and responsible for the evaluation of the prototype course, Diabas, which focused on managing official registers within the organisation. A pilot project was initiated at the end of 2001 for the development and test of a prototype of the course.

The evaluation of the learners' use of the prototype was reported in Grundén (2003, 2004a) and Theliander et al (2004). As part of the evaluation, a pre-study was made of the current work situation before the course. Registrars and handling officers were interviewed. The results of the interviews indicated that there were strict professional boundaries between the two groups. Very few of the handling officers registered their own measures in the cases they were dealing with. Instead they left these work tasks to the registrars at the department. Both work groups seemed to be fairly satisfied with this work division. The handling officers preferred to work with work tasks related to their academic background, instead of administrative oriented work tasks. However, an aim with the web-based course Diabas was to contribute to change of this work division, so that the handling officers would start to register their own measures. From the perspective of the managers, this would lead to more efficient and transparent dealing with the cases for the organisation.

After the tests with the prototype the course was further adjusted based on the evaluation and the course was then offered as an ordinary course for the staff of the County Administration of some counties. The author was made responsible for the further evaluation of the course, and inquiries with answers from the learners that had passed the course were to be sent to the author. However, during the first year not a single evaluation was sent to the author! Not a single member of the staff applied for the course voluntarily. Then the management of the county Skåne (in the south of Sweden) decided that all of their handling officers should pass the course. The handling officers were also encouraged to start to register their own measures, when they had passed the course.

Learning at Work

The internal organisation County Academy of the County Administration develops and administers internal web-based courses, as a way of spreading internal expert knowledge in an effective way to personnel. Corporate e-learning courses are usually developed by large organisations that can afford the costs for the production and administration of such courses. There are different alternatives to in-house education, e.g. to send personnel to external education or to buy externally developed courses, and offer them in-house, but the County Administration has found it most efficient to develop most courses internally, as external courses often are expensive, and the expert knowledge needed is difficult to acquire outside the organisation.

Modern organisations are often described as knowledge organisations, stressing the importance of relevant knowledge and competence among their co-workers (Nonaka & Nishiguchi, 2001). Changes in environment as well as in organisations put demands on changes of competence, and therefore relevant strategies for competence development are needed. E-learning at work focuses on possibilities of information and communication technology (ICT) to contribute to efficient and relevant learning processes in work organisations. Distance education and e-learning have been more and more common for university studies, and could also be used for internal education in organisations, especially relevant for large organisations; web-based courses are easily distributed to many learners. The courses may be studied in different geographical locations of the organisation at different point of time by the students. Learning at work is, however, more multidimensional by comparison with learning at educational institutions (Boud & Garrick, 1999). A common overall goal for in-house courses in organisations is that they should contribute to new knowledge for learners in order to improve both their work situation and the work process. The personnel should be motivated to participate in the course; the contents and forms of the courses should be seen as meaningful and relevant for the personnel. There must also be enough time during work hours to enable serious participation in the course. The application of new knowledge and competence to one's work and work situation must be facilitated. Adapting to

work routines could be needed, which should be seen as a positive outcome of the education, as visible evidence of situated learning within the organisation.

Modern theories of learning at work focus on 'work process knowledge', created in cooperation with different individuals and work groups in the 'community of practice' at work (Lave & Wenger, 1991). This knowledge is not always explicit, or even possible to articulate (tacit knowledge). Knowledge is not only seen as individually based, but also part of the social practice involving different technologies (artefacts, symbols, tools). To learn means to take part in such a community. It seems to be important to have close connections between theoretical education and practical work process knowledge in order to create 'work process knowledge' in the 'community of practice' (Lave & Wenger, 1991). According to Dewey's theory of 'learning by doing', learning is seen as a process with alternating stages of actions and reflection (Dewey, [1916] 2004). As workplace learning is a cultural practice (Spencer, 2001), educational efforts ought to be integrated in the ordinary work at the workplace, in order to become successful. Many e-learning courses at work enhance workers' knowledge without the knowledge subsequently being integrated into their work (Bronfman, 2008). In such cases a knowing–doing gap can be seen to have emerged (Pfeffer & Sutton, 2000).

Cultural aspects can both facilitate and hinder the adoption of a course and its consequent use (Halperin, 2008). If there are large discrepancies between the cultural practices of the workplace and the contents of the course, the consequences could be that the workers are not interested in taking part in the course, or are not motivated to use their new knowledge to change the work practice. Knowledge is used by professionals as a social capital, not only for problem solving, but also for power, prestige and status reasons (Torstendahl & Burrage, 1990). Professionals have traditionally been associated with knowledge monopoly, status, responsibility and autonomy (Hoyle & John, 1995). Professional territories and a professionalisation process could be hindrances for integrating new knowledge into work practices. Such power struggles may affect the motivation to apply new knowledge from a course into the ordinary work, and there could be struggles regarding the responsibility for different work tasks, according to studies by Grundén (2004b). Such 'power struggles' are not yet much focused on in e-learning research. There is a need to pay more attention to such professional aspects in further development of theories about e-learning in organisations.

E-learning at work is midway between the logic of production and the logic of development (Ellström, 2002). Increased education opportunities for the employees are often treated like a 'win-win scenario', where both the individual and the organisation could be developed (Senge, 1990). The staff are then able to develop their knowledge and motivation for work, and the quality and efficiency of the work process and the product or service produced is increased. But some researchers fear that the increased connection of work and learning could instead become new tools for control and oppression at work (Spencer, 2001). Knowledge is then treated mainly as a means contributing to increased production.

However, it is a real challenge to design courses that actually meet demands both from the work situation of the staff, the work process from the manager's perspective and the quality and efficiency of the product/service from the client's perspective. Negative attitudes from personnel could depend on lack of relevant knowledge and competence needed for the changed work situation. From the perspective of a participative approach, involving the personnel in educational activities can be a way of engaging the personnel, to make them more competent to respond to new demands from their work roles. The traditional way of implementing e-learning courses in large organisations is by delivering pre-designed systems. Instead, participatory design (PD) techniques could be used, integrating future users into the implementation process. In Scandinavia there is a tradition of PD (Bjerknes & Bratteteig, 1995). This could be a way of integrating the knowledge of future users into the systems development process of a course (Preece et al, 2002). For example, Morch et al (2004) used PD techniques in the implementation process of e-learning courses integrating future users, leading to some degree of decentralised decision making and extended time for reflection upon the implementation process. Webster (2008) argues that by engaging in a reflective and participatory design process, individual learners can attain a conceptual understanding of the e-learning process.

There is a need to integrate web-based courses with different organisational and individual needs. The traditional technological optimism that the availability of technology in education will

automatically change learning processes and learning outcomes is increasingly criticised (Spector & Davidsen, 2000; Jochems et al, 2004). Instead, there is a need for integrated learning approaches to also take pedagogical and organisational aspects into account. 'Blended learning' is a relatively new concept that is becoming more and more popular. The concept originates from the USA, and a broad definition is the blending of different pedagogical methods and technologies, e.g. mixing distance education with classroom education (Georgsen, 2004; Pegler, 2007). Blended learning could, for example, be a combination of individual studying and group-oriented studying.

Adaptive and Development-Oriented Learning

It is a challenge to design a web-based course according to relevant pedagogical principles, supporting the learning process by the learners. But producers of web-based courses are often engineers, with little education in pedagogical issues (Svensson et al, 2001). This can create a risk that a traditional adjustment-oriented design is over-emphasised in the design of ICT-mediated education. Adaptive learning is based on pre-defined problems and tasks, discouraging the employee's critical analysis and thinking as well as creativity. This design is relatively cheap to produce and distribute, with not much support needed. Many people can study at the same time. The adaptive learning is needed for managing routine tasks according to defined work routines (Svensson et al, 2001).

Development-oriented learning or creative learning, on the other hand, encourages a tentative, critical analysis and readiness for change of the work situation. Existing work routines are questioned, and new proposals could be developed. Such analysis could, for example, comprise organised group discussions at the workplace. Organised group discussions with follow-up by management contributed to a high level of total effects of a web-based course in a large-scale health care organisation (Grundén, n.d.). A study circle pedagogy approach could be relevant for support of development-oriented learning. According to another evaluation study of a web-based course in public administration made by the author, the participators very much appreciated the discussions organised at their workplace after the individual study component of the course. The pedagogical approach of the course was much inspired by the tradition of study circles. The study circle is a pedagogical approach that has a long tradition within the Swedish popular movement and has frequently been used by educational associations. A study circle usually consists of a smaller group with a study leader, who is more of a coordinator than a teacher. The study circle often has a generally formulated subject for study, but the participants can decide what aspects of the subject they will study more thoroughly. Study circles have also been used in working life, most often as a complement to other change activities (e.g. Erikson & Holmer, 1991).

A participative approach to systems development work could also be seen as an example of such learning processes, where development-oriented learning by the participants is encouraged (Grundén, 2004b). Development-oriented learning is usually more time-consuming compared with adaptive learning. Adjustment learning could be characterised as 'fast learning'. Too much time pressure during the learning process could lead to a 'tunnel perspective' and reduce the possibilities for alternative perspectives (Klein et al, 1993).

Both the adaptive and the development-oriented learning are complementary; they are two sides of the same coin. In an organisation there usually are a lot pre-defined work routines, but also more problem-oriented tasks with needs for creative solutions. Different organisations are characterised by different combinations. The logic of production is dominated by routine work, which is a prerequisite for effective production. Modern knowledge organisations also need constant development of current knowledge in order to deal with changed environmental demands.

From the individual perspective it is important to achieve a balance between adaptive and development oriented learning. If the work mainly is characterised by adaptive learning, this could lead to 'learned helplessness' and lack of development possibilities for the individual (Svensson et al, 2001).

The MOA-L Evaluation Model

The MOA-L [1] model was used as a frame of reference for the case study. A comprehensive description of the model and its use in different studies is given in Grundén (2009). The model was originally developed for the evaluation of CSCW systems (Computer Supported Cooperative Work), but has been slightly modified in order to be relevant also for evaluation of work-based learning. The model is based on the thesis of the author (Grundén, 1992) and has been used for several evaluation studies, such as the implementation of electronic dealing with public insurance matters within the National Social Insurance Board of Sweden (Grundén, 2000) and the use of videoconferences for planning meetings between a hospital and the county administration (Grundén, 2001). The model gives an overall theoretical frame of reference that was used in order to identify and evaluate some important aspects of work-based learning. These include the work situation of the staff, the change of the work process, and the quality of the service/product provided to the client. Interrelated relationships between design of the technology, the organisation and the education course are stressed in the model. Different consequences for the work process, the work situation, and the quality of the service provided to the client could arise depending on differently structured organisations, technology and education.

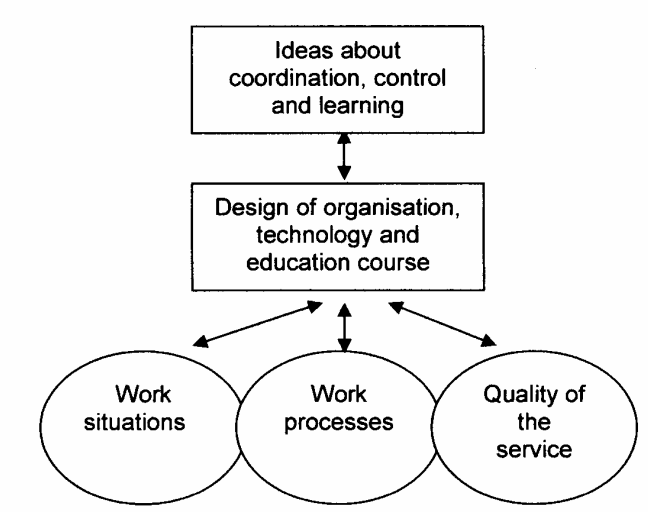

Figure 1. The MOA-L model.

Ideas about coordination, control and learning could influence the choice and design of technology, organisation and educational courses and affect many important decisions. Every such choice could lead to different quality and efficiency consequences for the work process, the work situation for the staff or the service provided to the client. The model may be used in order to compare different combinations of technology, organisation and education, and to examine the different outcomes. The MOA-L model is described in more in detail in Grundén (2003).

An evaluation study can focus on different parts of the MOA-L model. The work process can be studied both before and after the implementation and use of a new course in order to examine changes in quality and efficiency aspects of the changed work process and the work situation. The model is influenced by an interpretative perspective. Understanding of the context of organisation, technology and education, and the process whereby the systems influence and are influenced by the context, are central aspects of an interpretative perspective (Walsham, 1993).

The MOA-L model could be used at different points in time in order to gain a deeper understanding of the process. Different types of consequences could be examined depending on the point in time of the evaluation (Göranzon, 1984) (Figure 2).

Different consequences could accordingly be examined when the outcome of a new course is studied. It is not enough to evaluate a course at the end of the course, for example. The evaluation

must also be made after some time has elapsed, in order to examine how the work is affected due to the application of new knowledge from the learners of a course.

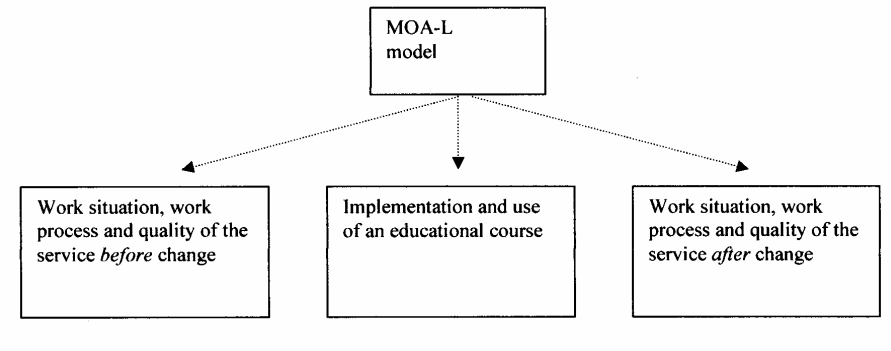

Figure 2. The use of MOA-L in a process-oriented study.

The Web-Based Course Diabas

The handling of official registers was taken as the first competence field for a course, developed by the County Academy of the County Administration of West Gotaland (a region in Sweden). Sweden has a long-established legal tradition regarding public access to official records. It is, therefore, important that the administrative routines of public organisations correspond to the demands of that law. The registrars perform most of the County Administration's registration work. There used to be one or two registrars at each department. They were mainly elderly females with administrative backgrounds. One aim of the course was to increase the competence of the handling officers so they could record the activities regarding their own matters in the registers. The personnel manager of the organisation thought that this would be more effective for the organisational work, and also increase the quality of the information in the registers. A web platform for distance education (Disco) developed by University West was used for the Diabas course. Disco contained functions such as the administration of course documents, a hand in (i.e. document forwarding) function and a debate board. In the Diabas course a matter could be initiated, dealt with and terminated. There were also search functions and statistical functions in the system. A centrally situated tutor could be contacted from the website.

The design of the web-based course Diabas mainly supported adjustment learning. The course should support the learning of formal routines, laws and regulations for dealing with official records at the County Academy. The course was divided into four separate sections. The first section dealt with the laws and decree regulating the registers. The advantages of relevant routines for dealing with registers were illustrated in a video. In the second section an introduction was made to the information in the Diabas system about a matter. Searching for information about a matter was the focus of the third section. The fourth section dealt with the registration of documents and measures in different matters. There were also separate links to electronic documents such as administrative manuals. The learners could submit their fulfilled tasks via the system and also contact a centrally situated tutor to ask questions about the course. The course was mainly supposed to be an individual course, but the learners could also discuss with members of the work group during the course if they wished, or use the debate board.

The course was supposed to take about eight hours to study. When the learners had finished the course they were to complete an evaluation form and send it to the author. The author kept the completed forms for evaluation analysis, and submitted only the names of the learners who had finished the course to the County Academy. Then the County Academy issued a diploma to each learner who had finished the course.

Results

Study of the Work Situation before the Course

An interview study was made by the author (Grundén, 2004a). Five registrars and eight handling officers with the official registers were interviewed. The interview questions focused especially on the three different aspects of the MOA model; the work situation, the workflow and the quality of the service to the clients. The aim of the new course, according to the course specification, was to achieve better quality in the official registers. The learners should achieve knowledge about the rules regarding dealing with the official registers. They should also be skilled in searching for and registering documents and measures in the Diabas system. According to the interviews most handling officers did not make such registrations themselves. The registrars initiate and terminate each case and most often they also do the registration of the measures of the case. Some of the handling officers did not quite seem to understand the importance of making proper registrations. Most handling officers were satisfied with the existing division of labour. They referred to increased workload, their special competence and to the fact that more and more administrative tasks were transferred from the administrative staff to the specialists, when they argued for no change in the existing division of labour. Half of the handling officers thought there was a risk that the quality of the registers would deteriorate if more handling officers started to enter the registration measures themselves. A few of the registrars had a more positive attitude and would appreciate having more time for other tasks if the handling officers made more registrations. The registrars emphasised that the existing work division of labour had a long tradition in the organisation.

Study of the Use of the Course

An investigation was conducted involving the first hundred students to pass the course in the County Administration in the south district of Sweden (Skåne). The questionnaire consisted of 13 questions. Almost all of the respondents did not register their own measures before the course (97%); 90% had passed the course as an individual course, but some had studied in groups with their colleagues; 87% of the students were very or fairly satisfied, and 13% were not quite satisfied or not satisfied at all with the course.

The course was the same for all students, except for the level of knowledge and experience of the students. Figure 3 shows the diffusion of time spent on the course by the students.

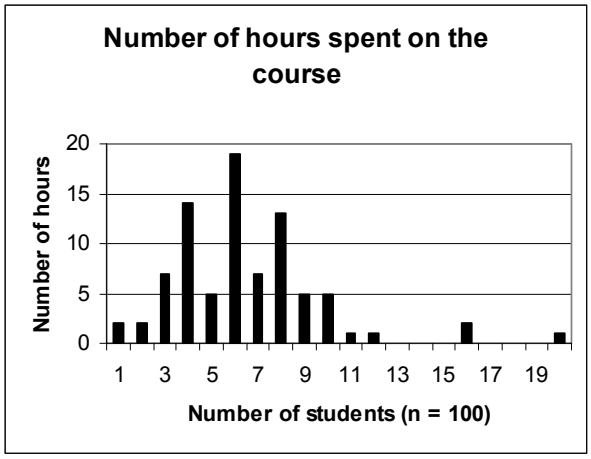

Figure 3. Number of hours spent on the course.

Some 14% of the participants thought they had more than sufficient pre-knowledge for the course, and 10% thought they had insufficient pre-knowledge for the course. The discussion board of the course was not used by the respondents. Instead they seemed to prefer discussions within their work group at the workplace. Most of the learners had used the course as a self-study course, but a minority (7%) had been studying in small group discussion with their group members. Very few

had contacted the centrally situated tutor of the course, using course links. Instead they had solved questions within the work group and asked the registrar working at the unit. The registrars were skilled in dealing with the diaries.

A majority (91%) were satisfied with the study form of the course, according to the inquiry immediately after the course. Many respondents commented, however, that the contents and study form of the course should correspond. A majority (61%) thought that the course would be very or fairly useful for their work (Figure 4), and 74% thought that it had been very or fairly easy to get enough time off for the course during working hours.

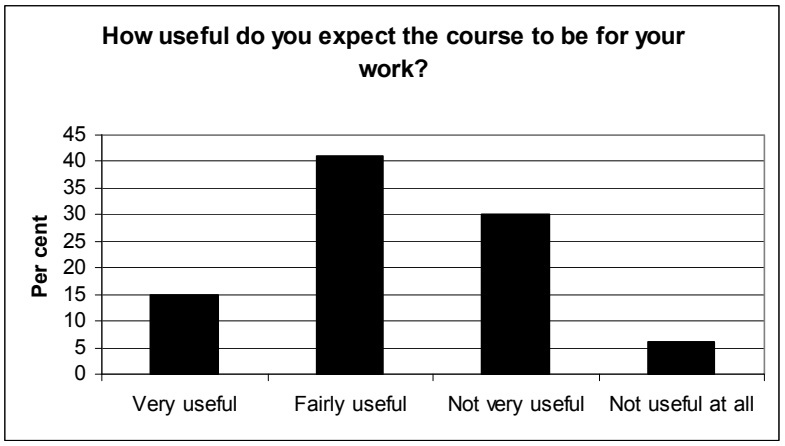

Figure 4. How useful do you expect the course to be for your work?

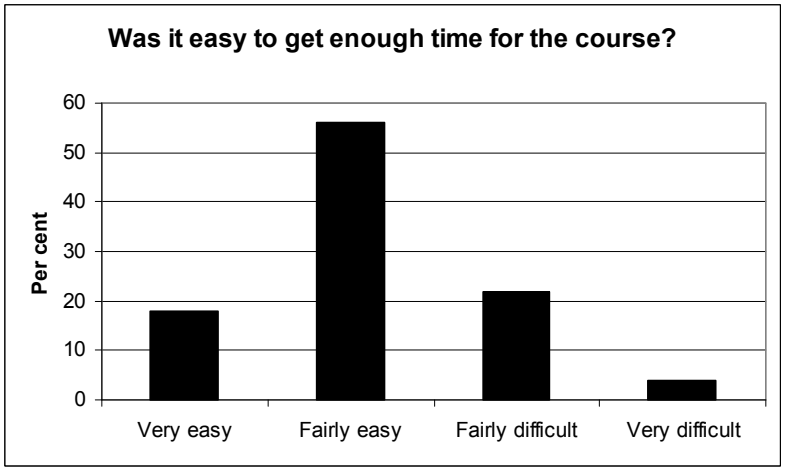

Figure 5. Was it easy to get enough time for the course?

Study of the Outcomes of the Course after One Month

One month after the students had passed the course the author conducted a telephone interview with the students. The learners were asked, for example, about the relevance for their work situation of the new knowledge gained from taking part in the courses.

When the respondents were asked during the telephone interviews, 77% preferred self-study, 21% preferred study in groups with a tutor, and 2 % preferred the study circle form. The respondents were also asked how easy or difficult it would be to get time off for a similar course (expected to last about eight hours and to be completed within a month). Some 35.9 % thought

that it would be very or fairly easy to get time off for such a course, compared with 31.6 % who thought that it would rather be very or fairly difficult (Figure 6).

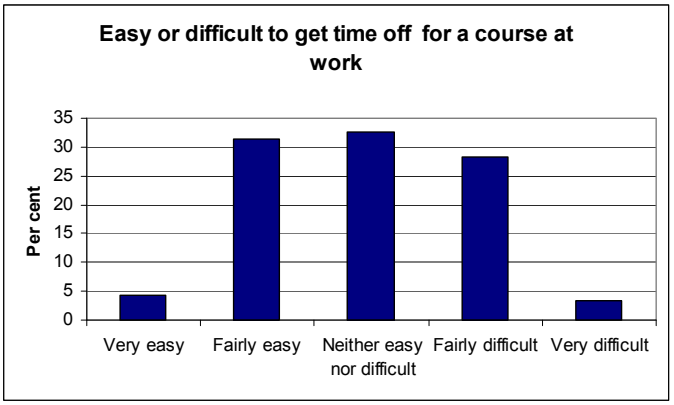

Figure 6. Easy or difficult to get time off for a course at work (a month after the course).

Some 41.5 % of the respondents answered that the course had been very or fairly useful for their work, and 42.6 % answered instead that the course had not been very useful or had not been useful at all (Figure 7). The percentage who had started to register their own measures partly or totally after the course was completed was 47.3%, compared with 52.7 % who did not start to register measures at all after the course (20% of the respondents mentioned that they had not started to register measures as they did not handle many such matters in their daily work).

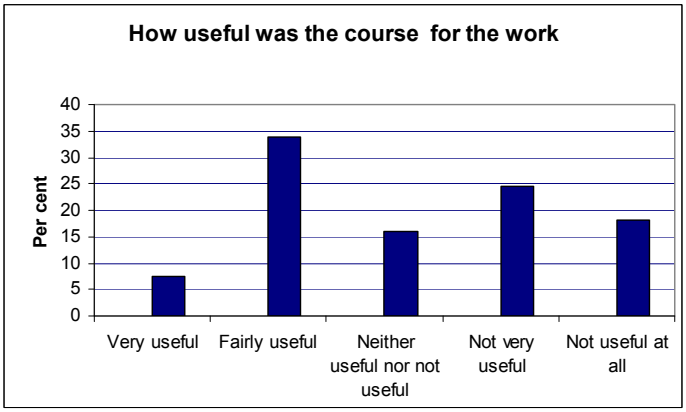

Figure 7. How useful was the course for their work (a month after the course).

Different Answers at Different Point in Time of the Evaluation

The questions about usefulness of the course, and how easy or difficult it was to get time off for the course, were slightly differently formulated in the questionnaire compared with the interviews (compare Figures 4-7). In the questionnaire distributed directly after the course, the respondents were asked whether they expected the course to be useful for their work. In the interview study, a month after the course, they were asked whether the course really had been useful for their work or not. In the questionnaires the respondents also were asked whether it was easy or difficult to get enough time for the course, due to the workload. In the interviews they were asked whether they thought it would be easy or difficult to get enough time in their work for another, similar course. Both questions also had an extra response alternative (neither useful/easy or not useful/difficult) during the interviews. (There were four grades of response alternatives; see the specified response alternatives in Tables I and II.) Due to these circumstances it was not relevant to use traditional statistical significance tests. Tables could instead illustrate interesting relations between the answers

from the study immediately after the course was completed compared with the answers one month after the course (Tables I and II).

	Immediately after the course was finished		
	Useful	Not useful	Total
A month after the course			
Useful	31	9	40
Not useful	14	19	33
Neither useful or not	6	9	15
Total	51	37	88

Note: 12 respondents did not answer both questions.

Table I. How useful the course was for the work.

Some 51 respondents expected the course to be useful for their work, when they were asked directly after the course was completed. But only 40 of those respondents found that the course really had been useful for their work when they were asked a month later. Nine of the 37 respondents who did not expect the course to be useful found that the course really had been useful for their work a month later.

	Immediately after the course was finished		
	Easy	Difficult	Total
A month after the course			
Easy	30	3	33
Difficult	12	17	29
Neither easy or difficult	27	5	32
Total	69	25	94

Note: 6 respondents did not answer both questions.

Table II. Easy or difficult to get time off for the course.

Sixty-nine respondents said that it had been easy to get time for the course due to the workload, but only 33 respondents expected it to be easy to get enough time off from their work due to the forthcoming work situation, when they were asked a month later. Twenty-five respondents thought that it had been difficult to get time for the course due to the workload, and almost the same (29 respondents) expected it to also be difficult to get time for the course due to the forthcoming work situation.

Analysis

Evaluation at Different Points of Time

The results stress the importance of studying consequences at different points of time. The qualitative study of the work situation before the course contributed to an understanding of the unwillingness to change the established work division among registrars and handling officers. This established work culture was probably one reason behind the fact that no handling officer applied voluntarily for the course during the year the course was offered as an ordinary course. The employees had to be forced by management to participate in the course, in order to change the established work division. A month after they had passed the course 47.3% of the learners had started to register their own measures in the Diabas system (compared with only 3% before the course). This indicated some course success from a management perspective.

If the evaluation of the course had been made only once (in a traditional way immediately after the course was finished) the results would have seemed more positive regarding the usefulness of the course for the work and possibilities for getting sufficient time to undertake the course at work. But the evaluations of the course are more balanced when we compare the results

of the learners' evaluations immediately after they had passed the course with their evaluations a month later.

The possibilities for getting sufficient time off from ordinary work varied a lot among the respondents: 29 respondents expected that it would be fairly or very difficult to get time for a similar course, when they were asked during the telephone interviews. Immediately after they had passed the course 25 of these respondents said that it had been fairly or very difficult to get enough time for the course. The reasons for this could be a change in the work situation. Most likely, the work situation was considered more stressful when the telephone interviews were made. The differences among the evaluations could also be related to psychological aspects. We probably judge a situation differently when we are in the situation, compared with some time afterwards, when we have more distance from the situation and are able to reflect upon what we have done.

The usefulness of the course was also judged to be lower a month after it was completed. The answers from telephone interviews made a month after course completion may reflect the actual perceived usefulness of the course, whereas the answers from the questionnaire probably reflect the supposed future usefulness, and these were not the same. One explanation could be that the actual work situation was not adjusted enough for the learners. Local managers need to promote and facilitate the integration of the new knowledge into work practices. Generally there is a need for a critical mass of employees to change their work routines so the new work routines are integrated into the community of practice.

Differentiation of the Course Contents According to the Pre-learning Levels of the Learners

The course Diabas was offered to all handling officers irrespective of their pre-knowledge and experience of dealing with official registers. Some of the learners were frustrated when they found the course too easy or too difficult. The estimated study time for the course was eight hours. Some of the students postponed the course, due to heavy workloads. For some the study time then took fewer hours than estimated, a fact that affected the pre-planning of the course. Courses at universities mostly are adjusted to a certain knowledge level and sometimes certain necessary or assumed pre-knowledge is specified. There are tendencies towards increased personalisation of education in several countries, e.g. in the USA (Metros & Bennet, 2002). This seems to be important also for courses at work, in order to increase the efficiency of the study time and motivation for the students.

According to study results, course contents not adjusted to the pre-knowledge of the learners seemed to negatively affect learner motivation. In a large-scale course there seems to be a need to differentiate the course contents according to different pre-knowledge levels – for example, learners who have no field experience, learners with some experience, and learners with much experience. The learners would probably have felt more motivated if the course manager had adjusted the course content to their pre-knowledge, instead of treating all learners in the same way. The pre-knowledge of the learners needs to be explored before the design of a course in order to identify different pre-knowledge levels, and to adjust the design to these levels.

Many Learners Were Satisfied with the Course but Did Not Integrate the Learning Outcomes into Work Practices

According to the questionnaire, 87% of the learners were satisfied or fairly satisfied with the course immediately upon passing it: a high level of positive appraisal of the course overall. Many respondents commented that the form of the course was well suited to its contents. The different study tasks, completing different web forms of the Diabas system with relevant information, were easy to understand for the learners. Most learners found individual studies by computer to be the most relevant form for the course. The learning process from the course could be classified as adaptive learning (Ellström, 2002). The learners were trained in how to handle the Diabas system. As previously noted, although the respondents were mainly positive towards the form and contents of the course, about half of the handling officers had still not started to make their own registrations a month after the course was finished.

Discussion: towards a participant approach for implementation of web-based courses

To facilitate integration of learning outcomes from a web-based course into work practices is a key challenge for the implementation of such courses. According to Rosenberg (2006), the role of change management could be crucial for implementing e-learning in organisations. One of the important roles of change management is to improve readiness and motivation to accept and integrate the new knowledge into work practices. But there could be a risk of relying too much on top-down communication, in order to emphasise efficiency aspects from management. Workplace learning is mainly a local activity; therefore the learning process could not be streamlined for the whole organisation. A participative approach to e-learning in the organisation could overcome the negative aspects of a purely top-down approach from management. Learning ought to take place in different directions in a learning organisation. A learning organisation should not promote only a top-down learning process but also support bottom-up learning experiences, in order to adapt to internal as well as external changes. The learners in the Diabas course were mainly positive toward the design of the course, notwithstanding the fact that almost half of them had not implemented their learning in practice a month later. Obviously, attitudes towards the design of a course can be positive without providing any guarantee of the new knowledge being integrated into work practices.

In order to contribute to changed work practices it is necessary to have a critical mass of learners studying the course during a specified time period. The request from management in the County of Skåne to attend the Diabas course during a specified time period seemed to have been of crucial importance for the high number of learners attending the course. But this was a top-down approach from management, and seemed to have influenced the attitudes towards the course to a certain extent. A purely bottom-up approach seems not to have been relevant either. During the year when the employees could have studied the course voluntarily, no one attended the course. A combination of a top-down and a bottom-up approach would probably have been the most successful way to organise the learning process in the organisation. Organised discussions related to the implementation of the course at the workplace could be a way of combining a top-down with a bottom up approach to e-learning: a participatory approach. Local management need to support and legitimise such discussion in order to support integration of the new knowledge into work practices.

There is a need for 'making sense' of the course, from a perspective of the community of practice (Lave & Wenger, 1991), in the same way as the process of sense-making related to ICT-adaptation, according to Henfridsson (1999). Sense-making probably contributes to motivation and a sense of purpose in the course for the learners. It is important to have articulated support from local management in order to organise learning activities at the workplace, but it also seems important to allow the employees to influence the way the learning takes place and to discuss the goals of the education programmes.

Motivation is an important aspect of learning. If the course was purely voluntary the learners seemed not to have been motivated enough to attend the course. There could be different reasons for these standpoints. For example, the employees might have experienced time pressures in their ordinary work, such that they would not prioritise the course without being requested by management to attend. Another reason could be that they did not think the contents of the course were relevant for their work. They could have been opposed to the proposed change of work division among registrars and handling officers because, for example, the established professional boundaries were threatened. A further reason could be the fact that none of their workmates appeared to be attending the course. Work culture influences behaviour to a great extent. The employees could also have been insufficiently informed about the course. Such issues could have been raised and discussed in organised workplace discussions, facilitating integration of learning outcomes of the course into the community of practice.

When group discussions are held upon course completion there could be some pre-defined discussion tasks as supplementary information to the course. Equally, however, the discussion tasks could also be formulated by participants themselves. Such discussions could promote development-oriented learning (Ellström, 2002). For example, local adoption hindrances could be identified and new work routines could be proposed. The learning process for the Diabas course was mainly identified as an adaptive learning process. But for half the participants the learning outcomes were

not integrated into work practice. If the adaptive learning process had been complemented with more development-oriented discussions, ways of integrating the new knowledge could have been identified and possibly adopted by more learners.

A participatory approach to e-learning could be accomplished if an individual web-based course is complemented with workplace discussions before *and* after the course has been attended by the learners. In general, a work group is situated in the same geographical area, e.g. in the same office. Under such conditions face-to-face interaction is most common for work group meetings. If, on the other hand, the work group is geographically scattered, web-based communication could be most suitable. It is important, however, to ensure choices among and within such interaction modes, so as to maximise rich and mutual interaction among the participants, and admitting informal aspects such as body language, facial mimics, and the like. Such aspects are also important aspects of the culture of a community of practice, and one aim with discussions in the work group is to integrate learning outcomes from the course into the work practices. According to the results from the study the learners on the Diabas course preferred group studies with their local work group, instead of using the discussion board for discussion with learners at other units. They also contacted the local registrar more frequently to ask questions, instead of using course links to the centrally located tutor.

This organisation of workplace learning ought to have the actively expressed support of management, in order to legitimate the participatory approach. Organised discussion before a course could be motivating for the learners. According to an evaluation study by the author (Grundén, n.d.) of implementation of a web-based course in a large-scale health care organisation, 'inspiration seminars' held for the coordinators of the course were much appreciated and enhanced their motivation for the course. Local management engagement, relevance of the course contents, and group discussions were some of the most important aspects contributing to a high level of effects of the web-based course.

It will not be sufficient to measure the outcomes of a course purely by questioning the learners at the end of the programme. There is also a need to integrate organised discussions in the community of practice, and to document and analyse these experiences, in order to learn from the process. This documentation and analysis could be made by participant researchers, but could also be managed by the learners themselves.

Conclusions

The traditional way of carrying out course evaluations at universities is to do so immediately after a course has been passed by the students. However, carrying out evaluations in this way is not enough when it comes to evaluation of internal courses at work. The study shows that there could be a risk of more positive evaluation of a course if the evaluation is made just after the course has finished. Instead a process-oriented evaluation is recommended, evaluating both the work situation before the course, the comprehension of the course immediately after the course has been passed, and also carrying out an evaluation about a month later in order to examine the relevance of the course for the learners' ordinary work. In this way the effects of the course for the learners' own work and work situation can also be enhanced by making visible how what was learned during the course has been applied in changed work routines and new uses of ICT – or if it has not, by sparking a more reflective attitude and co-constructive discussion around competence development and change within the organisation.

The study also shows that important aspects that could affect the attitudes towards the course are whether the contents of the course are properly adjusted to the knowledge level of the student. A participative approach towards the organisation of e-learning is proposed as an alternative to a pure top-down or bottom-up approach, enabling integration of learning outcomes into the community of practice. Individual studies could be combined with workplace discussions in order to relate the course contents more to the local community of practice, and promote motivation and development-oriented learning. Documentation and analysis of such discussions could contribute to understanding of the contribution of the course for the work contents at the workplace, as part of the evaluation methodology for e-learning at work.

Note

[1] MOA-L is an acronym for Människa–Organisation–ADB-system–Lärande (in English: Human Beings–Organisation–IT-systems–Learning).

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