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**WORKPLACE LEARNING:
A NEW MODEL APPLIED IN A CASE STUDY
IN THE NETHERLANDS**

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Workplace learning: a new model applied in a case study in the Netherlands

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The aim of this paper is to gain an insight into the organizational factors influencing workplace learning, to develop a new model for workplace learning, and to apply this model in a case study of a particular company. The research question is: Which organizational factors influence learning at the workplace and to what extent do these factors influence learning at the workplace in Waterboard X? On the basis of literature, six organizational factors influencing workplace learning (3 concerning the learning supply (1-3), 2 concerning the training supply in the workplace (5,6), and 1 concerning HRD (4)) have been identified and incorporated into a model, i.e. 1) features of a function, 2) information environment, 3) social working environment, 4) managing/personnel policy, 5) organizational variants and 6) quality of the training. Within these factors 31 variables were distinguished. These variables have been operationalized in a questionnaire that has been filled out in the presence of the researcher by 21 employees of two staff departments of Waterboard X. The results indicate that there is relatively much room for improvement within the training supply at the workplace (especially concerning factor 5), more than within the learning supply at the workplace. In both staff departments the development of the learning supply at the workplace seems to have been slightly one-sided. Finally recommendations have been made to Waterboard X concerning: development of introduction programmes for different functions, an EPSS, a knowledge card, action learning, learning communities and for enhancement of the quality of the communication between management and employees, and of the quality of the intranet.

Problem Statement

In recent years, the Dutch economy has been developing into a knowledge economy, in which knowledge has a great deal of added value for organizations. This economy is characterized by the continuing change of knowledge that organizations need to survive and prosper. Development of international relations, greater and tougher competition between organizations, demands for higher quality of products and services, automation and new techniques force organizations to acquire new knowledge continuously (Van Zolingen, 1995). Organizations can acquire new knowledge by contracting new employees, by offering their employees opportunities for learning or by doing both. This paper will concentrate on the second option and focus on workplace learning (Wortel, 2005). In the Netherlands, employers have become more and more interested in workplace learning because it can be applied directly in work and because it is cheap. Although employers do take an interest in workplace learning, fairly little theoretical research and even less empirical research has been done on this topic so far (Sambrook, 2005, Clarke, 2005). This paper will present a new model of workplace learning and its practical application in a Dutch company.

Research Question

The aim of this paper is to gain an insight into the organizational factors influencing workplace learning, to develop a model for workplace learning, and to apply this model in an empirical case study of a particular company. On the basis of literature, six *organizational factors* influencing workplace learning have been identified and incorporated into a model, i.e. 1) features of a function, 2) information environment, 3) social working environment, 4) managing/personnel policy, 5) organizational variants and 6) quality of the training.

The research question is: Which organizational factors influence learning at the workplace and to what extent do these factors influence learning at the workplace in Waterboard X?

Theory

Onstenk (1997) defines the *learning potential of the workplace* as “the chance of learning processes taking place in a specific workplace” (pg 213). According to Onstenk, this chance is determined by four different factors, i.e. 1) the competence and skills an employee already possesses, 2) an employee's willingness to learn, 3) the learning supply and 4) the training supply at the workplace as well as the relationships and interactions between these determinants. In other words, workplace learning demands employees who are able to learn on the basis of sufficient training, experience and learning possibilities, willing to learn (motivation and willingness) and are given the possibility to learn. In the first place, possibilities depend on the learning supply at the workplace, which is determined by

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content and form of a regular workplace and by the everyday working environment (social contacts, supervisors, workplace features) and, in the second place, on the training supply available at the workplace. An employee's ability and willingness to learn can be seen as personal factors. This paper, however, will confine itself to the organizational factors, i.e. the learning and training supply at the workplace that have an effect on the learning potential of a workplace.

Onstenk (2001) defines the learning supply and the training supply available at a workplace respectively as "the learning possibilities, in content and form, which a regular workplace and everyday working environment have to offer" (p. 289) and "any activities an organization puts on that are explicitly directed at improving the competence of its employees: supporting, structuring and supervising learning" (Onstenk, 2001, p. 290). There is no strict dividing line between learning supply and training supply at a workplace. There is rather a continuum running from work-integrated learning through learning activities at a workplace to structured training at a workplace.

Onstenk (1997) distinguishes three factors within *the learning supply at the workplace*, i.e. the features of function, information environment and social working environment (Fig. 1).

According to Onstenk (1997), the learning supply depends first and foremost on the content and complexity of the function; content and variation determine its learning possibilities. Consequently, a function should preferably contain preparatory, executive and controlling tasks reflective of vocational completeness. Secondly, it is important that new situations or problems should regularly occur in a function, so that employees will become familiar with new methods, techniques or products. Thirdly, employees need to have sufficient scope for exercising internal and external control, i.e. autonomy. Having internal control means an employee is able to exert influence on the working method, the order of work, the variety of tasks and work pace. Having external control implies that an employee is able to solve problems independently or, if he fails, to solve the problem still through consultation, cooperation or by influencing the preconditions. External control also entails employees having a say in decisions taken within the organization that directly affect their work (Baars-Van Moorsel, 2003). In Onstenk's opinion, another important condition is that the organization and content of the work should be arranged in such a way that they allow employees to maintain sufficient contact with others.

Onstenk (1997) believes that the information environment plays a role in the learning supply at the workplace in two ways. In the first place, the physical features of the working environment are important for learning. When problems occur at work, it is vital that employees have direct access to the information they need to solve the problem. Consequently, as far as physical features are concerned, a workplace should be organized in such a way that it allows employees access to all the information they need to carry out their work. Onstenk also underlines the need of learning aids being available at the workplace, such as job aids, Electronic Performance Support Systems (EPSS) and simulation programmes.

Finally, in Onstenk's view (1997), the social working environment is also essential to the learning supply at the workplace. This is because the immediate superior, colleagues and the team can play an important role in learning at the workplace. First and foremost, it is vital that employees should receive support from their colleagues and immediate superior (in the form of feedback, explanation or encouragement) whenever problems occur at the workplace. Such support can be given in the course of daily contacts, when specific problems or the progress of work are discussed or during work consultations. Secondly, contacts with colleagues and the immediate superior enable employees to learn to cooperate properly, to put working activities in a meaningful context and to reflect on meaningful incidents. To this end, sufficient communication possibilities are needed, both directly linked to the task and outside it.

Onstenk (1997) distinguishes two factors within *the training supply at the workplace*, i.e. organizational variants and the quality of training.

Within the factor organizational variants, Onstenk (1997) mentions three main types of workplace training, i.e. the structuring of learning possibilities at the workplace, participation in innovation and quality circles and structured workplace training. With the first two forms, the way in which the training is structured is directly linked to the production process, the content of the function and the working environment. The third variant is about 'real' training. Structuring learning possibilities at the workplace involves interventions in the different dimensions of regular working practice intended to promote learning. In an organizational sense, the common form of this type of training is induction training, during which the organization offers room to newcomers to gradually familiarize themselves with the task and the possibility of support from colleagues and/or immediate superior. Another more detailed form of structuring learning possibilities in the workplace is job rotation. Job rotation is made up of a series of introductory situations characterized by a higher degree of controlled learning in comparison to induction training. This is because in job rotation learning situations have been arranged in such a way those newcomers to a function are given the opportunity to pass through a structured series of

learning experiences. A second main type of workplace training concerns participation in innovation and quality circles. Rather than design functions with a high learning potential, this type of training focuses on the continuous innovation of functions and the direct involvement of employees in this process. Finally, the third main type is structured training at the workplace. Following De Jong's typology (2001), Onstenk distinguishes three types of structured training at the workplace with a trainer on the job, i.e. workplace training (apprenticeship learning), workplace instruction (job instruction) and workplace study (studying-on-the job). In workplace training, a newcomer is given training assignments that become more and more complex. In addition, he/she works close to, and under the responsibility of, an experienced colleague. Workplace instruction and workplace study, on the other hand, are more like training courses. Workplace instruction is based on detailed task analysis. Instruction and learning aids are used to guide the newcomer's behaviour. In addition, the newcomer trains the activities in different situations. In workplace study, the emphasis is rather on acquiring procedural knowledge and skills. Workplace study is above all characterized by a succession of assignments on the different parts of the task or the system to be operated. Another feature of workplace study is the availability of the right aids at the right moment, and room for exploration, reflection and consultation (Zolingen et al. 2000). De Jong mentions 5 other types of structured training at the workplace. In the first place mentoring, job application, action learning. These are variations of the three types of structured training at the workplace (apprenticeship learning, job instruction, studying-on-the job) mentioned by Onstenk only the trainer is outside the workplace. Further De Jong mentions coaching (trainer in the workplace) and supervision (trainer outside the workplace) as types of structured training at the workplace.

The second factor Onstenk (1997) distinguishes with respect to the training supply at the workplace is that of quality of training. The quality of workplace training is first of all determined by its content. Workplace training must offer employees opportunities to broaden, deepen and enrich their competencies. It must contain all the important tasks that make up a function. The quality of workplace training is also defined by its educational structure and choice of methods. Two points are important here. First, training is to offer exercise material that is sufficiently varied. Second, training is to provide newcomers with sufficient opportunities for cooperation. Onstenk argues that this second point is the more important one. It is concerned with supervising and structuring the learning process, i.e. the extent to which and the way in which employees receive explanation, instructions and feedback. Onstenk argues that the trainer has to be both a professional and supervisory expert as well as a highly motivated person.

Using other models and following recent developments in the field of workplace training, this paper adds a new factor to Onstenk's model, i.e. *managing /personnel policy* (see Figure 1). This factor affects both learning supply and training supply at the workplace. The factor managing /personnel policy has been fleshed out on the basis of Kruijd (1991), Laridon & Weekers (2004) en Kwakman (2004). Managing is described as influencing the behavior of another employee or group of employees. And personnel policy includes recruiting, keeping, training and using employees in order to achieve both individual and organizational goals.

This factor is made up of eight variables:

- Performance interviews: A talk in which the immediate superior speaks with the employee about the latter's present performance and wishes and expectations about the future;
- rewards: offering material or immaterial rewards to employees who have acquired new work-related knowledge, attitudes and skills;
- study facilities: the availability of internet, intranet, a library within the organization and compensation of the costs involved in following a training;
- responding to aspirations: the extent to which the immediate superior takes the employee's ambitions into consideration;
- providing for learning time: setting aside time for learning and/or reflecting on the work during working hours;
- assessment and development centre: a centre or department where aptitude and skills are assessed and examinations are made to support a person in his/her personal and professional development;
- learning community: a group of people that work together over a longer period of time in order to achieve vocational competencies, and share those experiences and reflect together on both results and working methods;
- HRM instruments: instruments aimed at strengthening the learning supply. For instance, the availability and implementation of a personal development plan, the availability of a knowledge card and/or group ware.

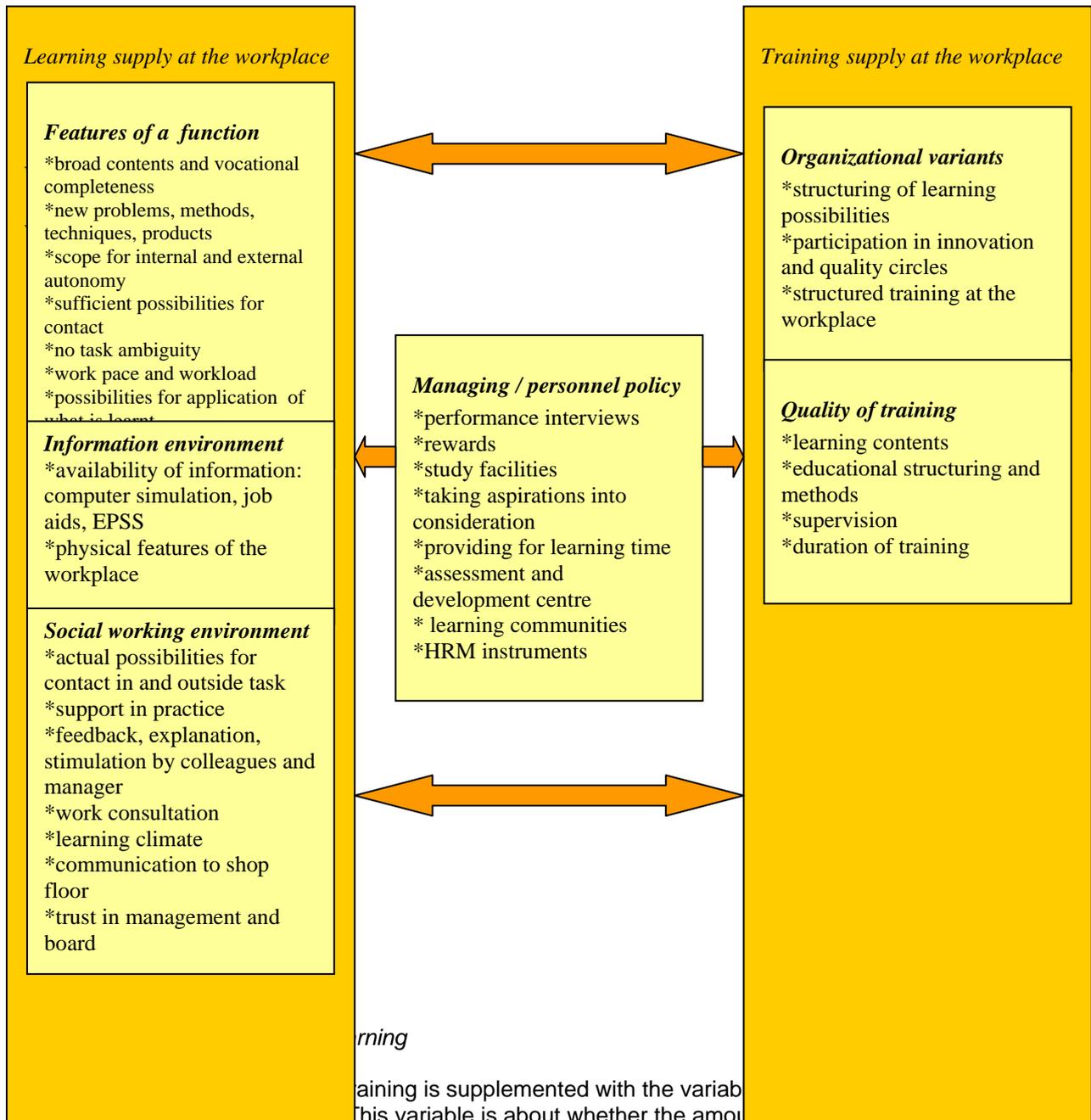
Onstenk's model has been further supplemented with new insights by van Baars-Van Moorsel (2003), Van Woerkom (2003) en Van der Klink (1999). On the basis of insights developed by these authors, variables are added to the factor features of the function, the factor social working environment and the factor quality of the training. Three variables are added to the factor features of the function, i.e. task ambiguity, work pace and workload and possibilities for application of what has been learnt (Fig. 1).

The first two variables come from Van Woerkom (2003) and the third variable from Van der Klink (1999). Task ambiguity is seen as the extent to which employees precisely know which tasks are part of their function and what others expect from them. Work pace and workload relate to the question whether employees feel they have to work very fast to finish their work and that their workload is (too) high. The third variable, i.e. possibilities to apply what has been learnt is concerned with the extent to which employees, in carrying out their tasks, see possibilities to put into practice what they have learnt.

Three variables are also added to the factor social working environment, i.e. learning climate, communication to the shop floor, and trust in management and the board (Fig. 1). Baars-Van Moorsel (2003) describes the factor 'learning climate' as a system of moral values that determines the attitude of the members of an organization towards learning.

Van Woerkom (2003) describes the factor 'communication to the shop floor' as the extent to which management informs the employees in time and in an adequate manner of any changes in the organization that affect them.

By 'trust in management and the board' she understands the extent to which an employee has trust in management and the board.



training will suffice to acquire the intended skills, attitudes and knowledge (Fig. 1)

Summarizing the first part of the research question: 'Which organizational factors influence learning at the workplace' has been answered with a new model of workplace in which learning supply at the workplace is distinguished from training supply at the workplace and from managing/personnel policy including 6 factors: 1) features of a function, 2) information environment, 3) social working environment, 4) managing/personnel policy, 5) organizational variance and 6) quality of the training and 31 variables.

Method

The model of workplace learning has been applied in a case study. The company chosen as the subject of the empirical research for this paper is a district waterboard in the Netherlands. The main task of this company is managing the quantity and quality of surface water in a specified area (along 110 kms of a Dutch river). The six organizational factors of this model, i.e. 1) features of a function, 2) information environment, 3) social working environment, 4) managing/personnel policy, 5) organizational variants and 6) quality of training have been made operational through the questions of a questionnaire. In addition, a few questions about the background of the respondents have been included (total of 72 questions). Most questions were developed by the researcher herself but some concerning the broad content of a job, vocational completeness, internal and external autonomy, task ambiguity, work pace and workload have been copied from the VVBA: Questionnaire Experiencing and Assessing Work. The questionnaire has been filled out by 21 employees in two departments (the department of control and the department) personnel and organization of the waterboard in the presence of the researcher (Table 1, Table 2). This had the advantage of the researcher being able to explain questions that were not clear, employees being able to add extra information, and the researcher having the opportunity of questioning respondents further if necessary.

Table 1: Functions of the persons employed in the staff department 'concern control' (n=10)

| Function | Number of persons |
|---|-------------------|
| Head of department / concern controller | 1 |
| Deputee head of department / controller | 1 |
| Controller | 1 |
| Consultant Service & Advice | 4 |
| Employee Service & Advice | 1 |
| Employee information management | 1 |
| Quality coordinator | 1 |

Table 2: Functions of the persons employed in staff department 'personnel and organization' (n=11)

| Function | Number of persons |
|---|-------------------|
| Head of department | 1 |
| Adviser quality, working conditions and environment | 2 |
| Employee personnel & organization | 1 |
| Employee personnel administration | 1 |
| Employee legal position and personnel management | 1 |
| Adviser personnel and organization | 4 |
| Temporary functions | 1 |

Data analysis

This paper assesses, for each organizational factor of the model of workplace learning (Figure 1), to what extent this factor leaves room for improvement. This assessment is expressed on a 5-point scale containing the following values: -- = much room for improvement; - = rather much room for improvement; +/- = moderate room for improvement; + = little room for improvement; ++ = hardly any room for improvement.

The final assessment per factor has been arrived at as follows. Each factor is made up of a number of (sub)variables. These (sub)variables, in turn, have been operationalized in the form of one or more questions. Some questions are of a qualitative nature, others of a quantitative nature. For both types of questions, the answers have been converted into a score on the --/++ scale used for the assessment. The assessment per variable, expressed on the --/++ scale, equals the average of the scores for the (sub)variables or questions used to operationalize the variable concerned. For instance, the variable availability of information is made up of the subvariables availability of job aids, computer simulation and EPSS respectively. The average score on the questions for availability of job aids comes to (+), the average score on the questions for availability of computer simulation to (-) and the average score on the questions for availability of EPSS to (--). The average of these scores then adds up to the score for the variable as a whole, in this example (-). The final assessment for each factor on the --/++ scale is arrived at by calculating the average for the scores for all variables making up the factor concerned. For instance, the factor information environment is made up of the variables availability of information and physical features of the workplace. The average scores on these two variables are (-) en (++) . The average of these scores is then the score for this factor, resulting in (+) in this example. As also appears from the above examples, in calculating the averages per variable

and per factor, scores have been rounded up according to the usual rules (upward of halfway between two scores is increased to the nearest whole number).

The answer categories of the quantitative questions together constitute a 5-point Likert scale, which runs from (completely) disagree to (completely) agree or from (hardly) ever to (nearly) always. The researcher has allocated scores to the answer categories belonging to the quantitative questions. These scores are given in table 3.

Table 3: Answer categories of the quantitative questions and corresponding scores.

| score 0 | score 1 | score 2 | score 3 | score 4 |
|--|--------------------------------|----------------------|--------------------------------|---------------------------------------|
| (completely) disagree (hardly) ever | slightly disagree Sometimes | neutral regularly | slightly agree fairly often | (completely) agree (nearly) always |

For each (sub)variable for which quantitative questions have been formulated the average score has been calculated. Average scores from 0 to 0,499 are classified under the answer category (completely) disagree or (hardly) ever disagree. Average scores of 0.500 to 1.499 belong to the response category (slightly) disagree or (sometimes) disagree. Average scores from 1.500 to 2.499 are classified under the answer category neutral or regularly. Average scores from 2.500 to 3.499 come under the answer category slightly agree or fairly often agree. And average scores of 3.500 to 4.000 belong to the response category (completely) agree or (nearly always) agree. Subsequently, the average scores were converted into an assessment on the -- / ++ scale. The criteria for this assessment are given in table 4.

Table 4: The possible average scores for (sub)variables operationalized using quantitative questions and the corresponding standardized scores.

| | -- (much room for improvement) | - (rather much room for improvement) | +/- (moderate room for improvement) | + (little room for improvement) | ++ (hardly any room for improvement) |
|---|--------------------------------|--------------------------------------|-------------------------------------|---------------------------------|--------------------------------------|
| (sub)variable with quantitative questions | 0.000-0.499 | 0.500-1.499 | 1.500-2.499 | 2.500-3.499 | 3.500-4.000 |

By way of illustration: the variable availability of good physical features of the workplace has been operationalized using two qualitative questions that could not be brought together on one scale. The average scores on these questions are 3.762 (++) en 3.619 (++) . The average of these scores is the score for the variable, which, in this case, comes to ++.

Scores have also been allocated to the qualitative questions. This has been done in order to enable the responses to the qualitative questions to be converted into a score on the --/++ scale. The answer categories of the qualitative questions and their corresponding scores are as follows: yes (score 1), no (score 0), no, but it would be useful if that were so (score -1), don't know (score 0). The answer 'no, but it would be useful if that were so' has been given a more negative score than the response 'no'. This has been done for the following reason. If, for instance, a knowledge card is not available within the waterboard, the respondent can choose both the answer 'no' and the answer 'no, but it would be useful if that were so'. If the respondent chooses to tick off the answer 'no', the researcher will deduce from this that the respondent concerned does not think it useful if a knowledge card were developed. If, however, a respondent chooses the answer 'no, but it would be useful if that were so', the respondent indicates that he/she misses something in the learning potential of the workplace. That is why the answer 'no, but it would be useful if that were so' has been given a lower score than the answer 'no'. Besides, the response 'don't know' gets the same score as the response 'no'. The argument for this is that the response 'don't know' means that a certain (sub)variable is effectively not available to the respondent concerned. For instance, if the respondent does not know that a knowledge card is available, he/she cannot use it either.

The reason to determine an average score for the qualitative variables as well, is that it enables the answers to the qualitative questions to be converted into a score on the --/++ scale. The criteria for this are given in table 5.

Table 5: the possible average scores for (sub)variables operationalized using qualitative questions and accompanying standard scores.

| | -- (much room for improvement) | - (rather much room for improvement) | +/- (moderate room for improvement) | + (little room for improvement) | ++ (hardly any room for improvement) |
|----------------------------|--------------------------------|--------------------------------------|-------------------------------------|---------------------------------|--------------------------------------|
| (sub)variable | -1.000- | -0.400- | 0.201-0.500 | 0.501-0.750 | 0.751-1.000 |
| with qualitative questions | -0.401 | 0.200 | | | |

Table 6: Reliability of the scales

| Scale | Cronbach's Alpha |
|---|------------------|
| Broad content and vocational completeness | 0.564 |
| New problems, methods en techniques | 0.826 |
| Internal- en external possibilities for control | 0.526 |
| Sufficient possibilities for social contact | 0.756 |
| Unclearness of task | 0.642 |
| Work pace and workload | 0.894 |
| Quality of job aids | 0.818 |
| Quality of EPSS | 0.535 |
| Possibilities of communication in practice | 0.804 |
| Support in practice | 0.835 |
| Quality of feedback from colleagues | 0.875 |
| Quality of feedback from manager | 0.900 |
| Quality of explanations | 0.515 |
| Stimulations | 0.797 |
| Quality of work consultation | 0.308 |
| Learning climate | 0.621 |
| Communication from management to the shopfloor | 0.857 |
| Quality of performance interviews | 0.709 |
| Quality of the library | 0.696 |
| Quality of intranet | 0.428 |
| Replacement of costs | 0.889 |
| Quality personal development plan | 0.631 |
| Groupware | 0.765 |
| Adequate time to learn | 0.670 |
| Adequate learning content (by coaching) | 0.949 |
| Adequate supervision (by coaching) | 0.762 |

By way of illustration: the variable availability of workplace application has been operationalized using qualitative questions (i.e. 'has there been any workplace application within your function' and 'have you had any workplace application') and a number of quantitative questions (these quantitative questions concern the quality of workplace application). 19 respondents have given the answer 'no' to the question 'has there been workplace application in your function' and two respondents have given the answer 'no, but it would be useful if that were so'. The average score on this question has been calculated as follows: $((19 \cdot 0) + (2 \cdot -1)) / 21 = -0.095$. The corresponding standard score is 'rather much room for improvement'(-).

As can be concluded from table 5, the scores on the qualitative questions have not linearly been converted into scores on the --/+ scale. The reason for this is as follows. Given the quantification of the scores on the qualitative questions, the average scores on the qualitative questions may range from -1 (if all respondents answer 'no, but it would be useful if this were so' to +1 (if all respondents answer 'yes'). The answer 'no' has been given a score of 0. If all respondents answered 'no' to a certain question, this would give an average score of 0. If the scores had been converted linearly, this would have given a score of +/- (room for moderate improvement) on the --/+ scale. However, the researcher believes that in this case the assessment 'room for moderate improvement' would have been too positive a score. That is why the scale has been chosen in such a

way that for awarding the qualification +/- or higher, a relatively higher threshold applies than linear conversion would have yielded.

Table 6 shows that most scales are reliable. Only the reliability of the scales of work consultation and quality of intranet are rather low (Cronbach's Alpha 0.308 and 0.428).

Results

To answer the second part of the research question "Which organizational factors influence learning at the workplace and to what extent do these factors influence learning at the workplace in Waterboard X?" the organizational factors influencing workplace learning that are available in the two departments of the Waterboard are compared with the criteria developed in the new model and with the needs concerning these factors as expressed by the 21 employees of Waterboard X.

As far as background data is concerned, there appear to be no significant differences between the two staff departments. Men and women are represented proportionally, and the relation between the various levels of education, the average age and average experience are the same for both staff departments. The answers to the open question also show that none of the respondents has missed anything in the questionnaire. Next, the results concerning the *learning supply at the workplace* are reported. This dimension consists of the factors features of the function, information environment and social working environment.

Features of the function is the first factor that is dealt with. The final score for this factor has come to 'little room for improvement' (+) (see Figure 2). The scores the respondents from both staff departments have allotted to this factor range from average to (very) good. Employees of both staff department judge the variable broad content and vocational completeness 3.571 (nearly always). This means that in the opinion of the employees their work has enough variation, it includes preparatory, executive and controlling tasks reflective of vocational completeness and all their competences are needed. Also they are frequently (score 2.143) confronted with new problems, methods and techniques. The background variable age has a significant effect on the answer of the employees. Older employees are more often confronted with new problems, methods and techniques than younger employees. Further the employees indicate that they often (score 2.547) have enough autonomy to tackle the problems in their work. Further sufficient possibilities for contact (score 3.095) are present. This is the consequence of working in teams in both departments. Tasks and responsibilities are clear as well as expectations of colleagues and managers (score 3.024). Workpace and workload are sometimes too high, yet employees often (score 2.667) have the opportunity to apply newly learned methods and techniques in their work. Age has a significant effect here. Older employees indicate that they are more often able to apply newly learned methods and techniques in their work.

Information environment is the second factor that is presented has 'little room for improvement' (+) (see Figure 2). The variable availability of information has scored a – (rather much room for improvement). Both staff department have job aids. Eleven of the 21 employees have indicated that there are job aids. The quality of these job aids was rather good (score 2.867). Computer simulations were not present and according to the employees not needed. There is no EPSS (Electronical Performance Support System) at Waterboard X, but 15 of the 21 employees have the opinion that an EPSS would be usefull for their work. According to the employees the physical features of their working environment are very good (score 3.762) and they can reach alle necessary information from here (score 3.619). On the last question employees of the staff department 'personnel and organi'ation' score significantly higher (mean score 4.000 (very) good) than the employees of the staff department 'concern control' (mean score 3.200, rather good).

Social working environment, the next factor, has scored 'little room for improvement (+) (see Figure 2). The highest score (very) good) was awarded to the variable support in practice (do you feel your colleagues / immediate superior will be helpful if you have got any questions or remarks about the work). The scores on the other variables range from average to fairly good. On one of these variables the staff department had a significant effect, i.e. the variable of trust in management and the board.

The employees have many (score 2.500) possibilities to communicate. This means that during their work they can solve a problem together with colleagues or exchange experiences with them. Support is present when needed (score 3.500). Employees can always ask questions or make remarks to colleagues or the manager. They also need feedback of colleagues (score 2.000) regularly and get feedback (score 1.571) that is rather good (score 2.850). Age has a significant effect. Older employees judge the quality of the feedback higher than younge employees. Further employees regularly (score 1.762) need and get (score 1.632) feedback from their manager of rather good quality (score 2.842).

Experience has a significant influence. Employees with more experience need more feedback from their manager. Most employees experiences problems in their work they have no solution for. But experience is significant. Older employees experience less often problems they cannot solve than younger employees. Those employees that experience problems they cannot solve ask for help and get rather good (score 2.563) help from their colleagues and managers. Colleagues and the manager activate employees regularly (score 1.905) to develop themselves further. Older employees are significantly more activated than younger employees.

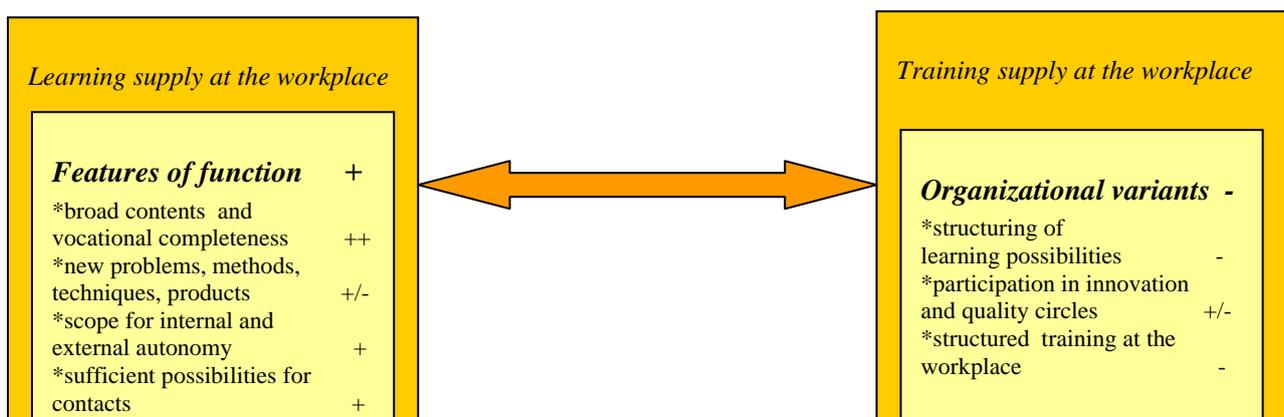
The next variable is work consultation. Most of the employees have work consultation of rather good (score 3.191) quality once a week. The learning climate is judged passable (score 2.410). This means that mistakes and bad habits are discussed and that there is time to experiment. Also the communication to the shopfloor is passable (score 2.333), whereas older employees score higher than younger employees. Finally employees trust in management is passable (score 2.000). Employees of the staff department 'personnel and organization' trust top management significantly less than employees of the staff department 'concern control'.

The fourth factor that is brought up is *managing/personnel policy*, which has scored (+/-), moderate room for improvement (see Figure 2). There appear to be no rewards for learning, no knowledge card (or, at any rate, it was not used) and no learning communities. Just like the preceding variable, the other variables have been awarded scores that range from average to fairly good. They also included one subvariable on which the staff department had a significant effect. The subvariable concerned was availability of an assessment and development centre.

With the exception of one person all employees had a performance interview of very good quality (3.474) with their manager. Learning is not rewarded. All study facilities mentioned in the questionnaire such as use of a library (quality passable 2.3), internet (quality passable 2.3), and compensation for time studied (very good, score 3.750) are present by Waterboard X. Most of the employees made use of one or more of these study facilities during the last 6 month. Their manager takes their aspirations more or less (score 2.286) into account. Older employees are more satisfied than younger employees. Employees get regular (score 2.317) time to learn. They are activated and get time to reflect about and learn from their work. Employees of the staff department 'personeel en organisatie' know the possibility of using an external assessment- en development center. Employees of the department 'concern control' do not know this. Only three employees have made use of a rather good (score 3.333) (external) assessment- en development center in the last 6 month. Officially there are no learning communities in Waterboard X. Only 3 of the 21 employees mention an informal learning community. The variable HRM instruments shows that most respondents have developed a (rather good, score 3.167) personal development plan last year. A knowledge chart is missing and would be useful according to most employees (all men and half of the women). Amazingly according to one employee there exists a knowledge chart, but nobody uses Groupware of good quality (score 3.746) is available by Waterboard X and is used by all employees.

Finally, the results concerning *training supply at the workplace* are presented. This dimension consists of the factors organizational variants and quality of training.

The assessment of the factor organizational variants has yielded the score (-) , rather much room for improvement (see Figure 2). First the variable structuring learning possibilities. Most employees have the opinion that job rotation is impossible and they don't need it. Two employees have replaced a pregnant colleague. They conclude that job rotation is possible. Further there are no induction programmes for new employees and half of the employees say that induction programmes for different functions are needed. The variable participation in innovation with score +/- leaves room for moderate improvement. Within both staff departments quality circles are operational. Not only the existing situation is evaluated but also future developments. Topics are 'how do we develop a good management information system' or 'is our reintegration strategy adequate and how can we improve it?' Further Waterboard is 1 januari 2004 arisen from a fusion in which 12 employees participated actively. The other employees also would have liked to participate in the restructuring of the new organization.



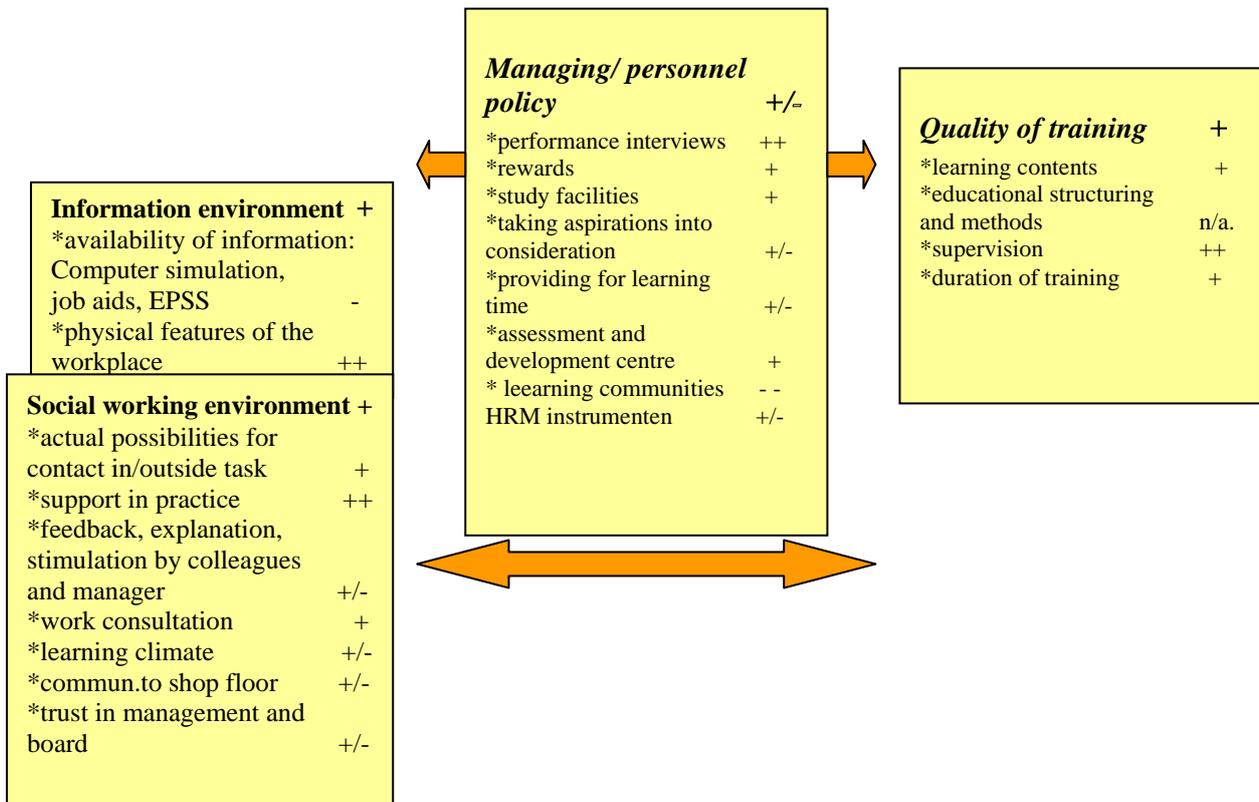


Figure 2. Workplace learning in the staff departments 'personnel and organization' and 'concern control' of Waterboard X.

The variable structured training at the workplace in Waterboard X leaves rather much room for improvement (-). It is only present in the form of coaching. No other form of structured training at the workplace such as workplace training (apprenticeship learning), workplace instruction (job instruction), workplace study (studying-on-the job), mentoring, job application, action learning and supervision exist in Waterboard X according to the employees. Most employees also mention that they do not need these absent forms of structured training at the workplace at Waterboard X. Coaching is applied in the two staff departments. Seven of the 21 employees have been coached last year. The employees that have not been coached also did not need it.

Finally the factor quality of training is judged: little room for improvement (+) (see Figure 2). This factor is applicable to all forms of training distinguished in structured training at the workplace. Since of all forms of structured training at the workplace only coaching is available, the assessment of the factor quality of training is similar to the assessment of the quality of coaching. The assessment of the factor quality of training has resulted in + (little room for improvement). The employees that have been coached last year judge the content (of coaching talks) and the time (made available for the coaching talks) rather good (score 3.000) and the supervision of the coach very good (score 3.500).

From the above results it emerges that the staff department only has a significant effect on three (sub)variables. It can also be argued that the workplace learning has been developed to the same level in both two staff departments. On the factors features of the function, information environment and social working environment (together making up the learning supply at the workplace), both staff departments have achieved the highest scores. All these factors leave little room for improvement (+). The next factor dealt with was managing /personnel policy. There is moderate room for improvement for this factor in both staff departments (+/-). Finally, the factors were discussed that together make up

the training supply at the workplace. The factor organizational variants leaves rather much room for improvement (-), and the factor quality of training leaves little room for improvement (+). It should be noted here, though, that the assessment of the latter factor is only based on the assessment of the quality of coaching, because the other seven forms of structured training at the workplace are not available. Consequently, there is relatively much room for improvement within the training supply at the workplace, more than within the learning supply at the workplace. In conclusion, we can say that in both departments the development of the learning supply at the workplace seems to have been slightly one-sided.

Conclusions

First of all, the learning supply at the workplace was discussed. This dimension includes the factor features of the function, information environment and social working environment. Of these three factors, only the present availability of the variable information (belonging to the factor information environment) does not meet the criterion. As regards this variable, a fairly large number of respondents have indicated that they want the situation to be improved. It should also be noted that the variable work pace and workload (belonging to the factor features of the function), though it does meet the criterion, appears to be unequally divided. This is because in the eyes of a number of respondents the present availability of this variable does not correspond with its theoretically desired availability. These respondents have indicated that they want the situation to be improved. Next, the factor managing /personnel policy was dealt with. This factor contains one variable that does not meet the criterion set in this paper, i.e. the variable learning communities. A fairly large number of respondents have indicated that they do want this variable to be improved. It should also be noted, with respect to the variable HRM instruments, that a knowledge card is not available and that a fairly large number of respondents has indicated that they think this situation needs to improve. Finally, the factors organizational variants and quality of the training were considered, which make up the training supply at the workplace. These factors include two variables that do not meet the criterion concerned, i.e. structures of learning possibilities and structured training at the workplace (both belonging to the factor organizational variants). Respondents have indicated that they want the situation to be improved for both variables.

Using the findings of this research, a number of recommendations can be made. The causes of the unequal division of pressure of work (work pace and workload) should be found out. An Electronic Performance Supportive System, EPSS should be developed. The quality of communication between management and the board and their employees should be enhanced. A knowledge card should be developed. The quality of the intranet should be enhanced. Formal introduction programmes should be developed for different functions. Action learning and communities of learning should be initiated. Finally the results show that age or experience have a significant effect on nine variables, whereby for a number of those variables the direction of the correlation is contrary to the expected direction. For instance, the less experienced respondents appear to have less need of feedback from their immediate superior and to receive less feedback from their immediate superior than the more experienced respondents. They also experience less incentive and have less need of action learning. The assumption was that younger and less experienced respondents, since they face relatively longer careers and have still more to learn, would have a greater need of workplace learning than the older respondents and would receive e.g. more feedback and incentive. That is why the researchers think it interesting to study the causes of these striking results in greater detail.

A weak point of the empirical study concerning learning at the workplace of employees of Waterboard X is that no operational department, and only 2 staff departments of Waterboard X have been included. A further limitation is that only organizational factors have been included in this study, whereas it is common knowledge that personal factors also influence learning at the workplace of employees. This last choice was made because organizational factors are easier to influence by management and limited time forced the researches to make choices.

Summarizing the new model on workplace learning is applicable in a case study and can be used to identify needs employees have as regards workplace learning. It also enables specific recommendations to be made for organizational factors influencing workplace learning, e.g. when the needs of the employees diverge from the criteria formulated for the organizational factors.

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