

## Critical Reflection on the Shop-Floor

*Marianne van Woerkom*  
*University of Twente/ Stoas Research*

*Wim. J. Nijhof,*  
*University of Twente*

*Loek F. M. Nieuwenhuis*  
*Stoas Research*

*The purpose of this study was to describe on-the-job learning and to find out if 'flexible craftsmanship' is a useful measure of output for on-the-job learning. The results indicated that flexible craftsmanship is no neutral measure of output, because it takes into account only the employer's view of 'ideal employees'. A certain form of on-the-job learning (namely critical reflection) may itself serve as a more neutral measure of output for further research.*

Keywords: Critical Reflection, On-The-Job Learning, Informal Workplace Learning

### Problem Statement and Theoretical Framework

The research reported in this paper is the first, explorative phase of a four-year research project that started with the question of how to describe and explain the informal on-the-job learning process the aim of the first phase of this research was to find out if flexible craftsmanship really is a useful measure of output for on-the-job learning. Marsick and Watkins (1990) define informal and incidental learning as the learning that results from the natural opportunities for learning that occur every day of a person's working life when the person controls his learning. According to Marsick and Watkins (1990), informal learning can be planned or unplanned and involves some degree of conscious awareness that learning is taking place. Incidental learning is expected to be a sub-category of informal learning and is defined as a by-product of some other activity, such as task accomplishment, interpersonal interaction, or trial and error experimentation. Incidental learning is unintentional and unexpected and almost always takes place although people are not always conscious of it (Marsick and Watkins, 1990).

Furthermore, the underlying idea was that the informal on-the-job learning process should serve a purpose, or lead to a specific objective. On-the-job learning should result in a better, more competent employee. To this end the concept of 'flexible craftsmanship' was developed. As in many professions changes take place in the content and organisation of work, flexibility is an important and necessary aspect of craftsmanship. Sternberg (1985, 1988) connects flexibility with the concept of experiential intelligence which relates to two aspects of intelligence that are counterparts, namely coping with novelty and automatization. The newer the tasks and situations are that a person is confronted with, the more they will appeal to his ability to cope with novelty. On the other hand, if experience of the same kinds of tasks increases, the appeal is to his ability to develop routines. Too much emphasis on experience variation may come at the expense of efficiency and productivity, whereas too much emphasis on experience concentration may come at the expense of flexibility and employability (Thijssen, 1996). This means that flexibility is not the be-all and end-all; for an effective and productive performance, there needs to be a balance between routine and flexibility. In the research, informal learning processes were therefore assumed to influence both craftsmanship (the ability to function effectively and efficiently in a profession) and flexibility (the ability to cope effectively with change). Since flexible craftsmanship is a newly-developed concept on which no further literature is available, the aim of the first phase of this research was to find out if flexible craftsmanship really is a useful measure of output for on-the-job learning. In order to be able to study on-the-job learning more extensively in the next phase of research and in a less explorative manner, the other aims of the explorative phase were to demarcate this concept more clearly, and to gain an insight into the factors that are influencing it.

## Research Questions

The research questions for the first exploratory phase of the research are:

1. Is 'flexible craftsmanship' an adequate measure of output for informal on-the-job learning?
2. How can informal on-the job learning be better demarcated?
3. What factors (individual and organisational) influence informal on-the-job learning?

## Methodology

To answer the above research questions, case studies were carried out in seven organisations: two banks, three factories (a cheese factory, a packaging factory, and a textile-printing factory), a call centre, and the Post Office (organisation). These case studies function as a preliminary investigation for the main research. On the basis of the results of the case studies, more extensive research will be conducted, in which the findings of the case studies will be tested. A case-study design was chosen because of the need to research the reality value of the limited conceptual model by identifying the viewpoints of participants in organisations (Swanborn, 1996) and because of the need to construct a theory arising from the observations. 'Explorative' means that not just the initial concept (flexible craftsmanship) was tested, but also that allowance was made for alternative explanations concerning the topic of the research. The cases were analysed in a comparative way. The aim of comparing the results of the case studies was to build a general explanation model that would fit each of the individual cases, even though cases would vary in their details (explanation building Yin, 1994). Since the case studies were explorative, no specific criteria were used for selecting them, except for a reasonable balance between services and industries. For reasons of efficiency, an approach was made to organisations that had already had contact with other departments of Stoas.

Table 1: Organisations and respondents

Organisation	Respondents			
	Senior Managers	Line Managers	Shop floor Workers	Total
1. Cheese Factory	1	1	2	4
2. Packaging Factory	2	1	1	4
3. Call centre	1	1	2	4
4. Bank 1	2	1	2	5
5. Bank 2	2	1	2	5
6. Textile Printing Factory	2	1	2	5
7. The Post Office	2	1	2	5
<b>Total</b>	<b>12</b>	<b>7</b>	<b>13</b>	<b>32</b>

In order to form an idea of the view of management and its strategy, as well as of daily practice on the shop floor, the respondents in these organisations represent different hierarchical levels. The first interview to be conducted in these organisations was with a senior manager concerned with personnel. The (summarised) interview questions put to this manager were:

- Can you give an overall impression of the company's background?
- What kind of developments does this company have to contend with?
- What are the consequences of these developments for the definitions of craftsmanship and flexibility? What is your definition of a 'good employee'?
- What is company policy towards the learning organisation and on-the-job learning? Is this company a learning organisation? Why (not)?

Subsequently, line managers and shop-floor workers were interviewed. Apart from the same interview questions as were put to the senior manager (sometimes aimed more at the department of the organisation people work in), these employees were asked the following (summarised) questions. (The interview with the line managers related to the jobs of their employees instead of their own job):

- Can you describe your function and the position of your function in this organisation?

- Can you discuss the recent changes in your job? What consequences did these changes have for you? Did this lead to problems in your functioning? What were they?
- Do you perceive yourself as a craftsman or a 'good employee'? Why? Do you perceive yourself as flexible? Why? (line manager: What is your definition of craftsmanship, a 'good employee', a flexible employee? What bottlenecks exist concerning craftsmanship, etc.)
- Are you stimulated to develop your craftsmanship? In what way? Are you stimulated to be flexible? In what way? (line manager: What measures are being taken to stimulate craftsmanship, flexibility and employability?)
- Can you learn in and from your job? Why? Can you give examples of things you have learned in the past year?
- Do you reflect on problems in your work and how to solve these problems? Can you give an example? Do you ever try to improve aspects of your work or your way of working? Can you give an example? Is it a challenge to learn? Why?

The interviews were written into reports, in which the topics discussed were clustered under the following headings: background information, developments, definition of flexible craftsmanship and a 'good employee', on-the-job learning, factors influencing on-the-job learning. Reports of the interviews were sent to the respondents for feedback. Next, the results of all seven case studies were summarised in a data-matrix containing the same topics as the interview reports. If interviews with participants within one organisation were not convergent this was also noted. Subsequently, the results of each of the topics were summarised in a way that fitted all the individual cases in general. These results are discussed in paragraphs 4.1 to 4.6. Due to limited space, and in order to enhance the readability of this article, it was decided to illustrate the results with some examples, instead of systematically discussing all the cases in the same degree of detail. However, if some of the cases do not support the summarised results, this will be explained.

The research reported here is explorative, and started with quite broad research questions. It was, however, considered necessary as a first step in the total research process to start as close as possible to real-life situations in organisations, in order to make the right decisions and create an appropriate research model for the continuation of the research. Furthermore, an interview-based approach with a semi-structured interview guideline brings its own limitations when discussing a topic like informal workplace learning, which is mainly tacit. However, for the first phase of the research, this was considered the best option; for the continuation of the research, more specific research instruments will be developed on the basis of the results that are being gathered.

## Results

The following paragraphs discuss the results that emerged from the case studies. The first research question is answered in paragraphs 4.1 to 4.3; paragraphs 4.1. and 4.2 discuss the problems that emerged concerning the concept 'flexible craftsmanship'. Paragraph 4.3 discusses the relationship between informal on-the-job learning and flexible craftsmanship. Paragraph 4.4 introduces both an alternative measure of output for on-the-job learning (instead of 'flexible craftsmanship') and an answer to the question of how on-the-job learning can be better demarcated. Paragraphs 4.5 and 4.6 discuss respectively individual and organisational factors that influence informal on-the-job learning.

### *The Conflict between Flexibility and Craftsmanship*

The first thing to emerge was that the concept of 'flexible craftsmanship' is more complex than had been expected. Flexibility may well be incompatible with craftsmanship. As a result of competition, generally speaking, two things may occur in an organisation. There may be strong pressure either on quality or on efficiency (or both). In the latter case a great deal is invested in computerisation and, as a result, jobs may be downgraded or disappear altogether. The conflict between flexibility and craftsmanship is shown most clearly by the case study of the call centre. In the call centre, operators have to answer calls from customers who are looking for a telephone number (8008-service). Here, flexible employees are seen as those who can adapt easily to the new demands the employer is making on the profession. These demands are to comply with the standards regarding the number of calls handled per hour, and to bring the call promptly to an end in a charming way if questions from customers prove too time-consuming. This new definition of craftsmanship conflicts with the old one: always try to help a customer, no matter how much time it may take. Employees, who in the old situation used to be seen as good operators, in the new situation may well be the ones that do not fit the definition of a good operator.

The other cases also showed the conflict between flexibility and craftsmanship. Jobs may not always be downgraded, but very often jobs have changed so radically that no part of the old job remains. Many workers in the cheese factory, the packaging factory and the textile-printing company were very fond of their 'old' craftsmanship being a traditional handicraft. Flexibility for them meant saying goodbye to their old craftsmanship and accepting what was sometimes completely different craftsmanship. At the banks this was especially the case for employees in administrative jobs that had been computerised, and for all the specialists at the bank who nowadays have to become generalists.

The question then is who is the most flexible craftsman, the one who accepts that his job has been downgraded or radically changed, or the one who puts up the greatest resistance? Flexible craftsmanship seems to be influenced by the extent to which one is able to come to terms with the demands made on the profession by management and one's willingness to leave the old craftsmanship behind. Flexible craftsmanship is thus not a neutral concept, but would seem to be an output measure of on-the-job learning seen purely from the employer's viewpoint.

### *Flexibility or Employability?*

As stated before, the changes that occur in jobs may sometimes be quite radical. In many jobs very little of the former tasks remains. Some of the companies in the case studies (the Post Office, the call centre, and the giro bank) are in a state of transition from being a state-owned company to becoming a private company. This transition is bringing about many changes in jobs on the shop floor. Post Office counter clerks suddenly have to become commercially-minded and to sell registered post. In the call centre and the giro bank the transition from being a state-owned company to becoming a private company is putting great pressure on efficiency. Many jobs have become Tayloristic and, thanks to computerisation, many others have ceased to exist. In the giro bank those jobs that are left are of a higher level (skilled craftsmanship). At both the banks many administrative jobs have disappeared altogether because of computerisation.

Since employees cannot easily be dismissed, organisations often try to make attractive offers to those employees whose jobs have disappeared or to employees who are unable to comply with the new demands being made of them. They are often offered different positions within the organisation. Alternatively they may choose either to train for another position in the company, or to follow a course of training of their own choice. If they choose the latter, the deal is that they leave the company after a certain period of time. Many employees, however, remain in their old jobs and refuse the offers made to them, even though they know that their job will disappear or that they do not like the changes that are taking place in their job. A personnel manager at the Post Office stated that organisations with routine, rather undemanding jobs that have ceased to exist or will soon do so should try to ensure that their employees move higher in Maslow's pyramid (self-development) so that they can look for another job on their own initiative.

This leads one to the conclusion that flexibility should not be defined on the basis of employment with one specific employer. The ability to take responsibility for one's own career if one does not like the changes that are taking place in the job, and to continue this career with another employer may also be seen as a characteristic of a good employee. It is noteworthy that this ability is not only in the interests of the employee but also in those of the employer, if, for example, jobs change or disappear and employees cannot be dismissed because they are protected by law.

### *The Influence of the On-the-job Learning Process on Flexible Craftsmanship: Willingness or Potential to be Flexible?*

Before starting the case studies it was assumed that flexible craftsmanship was influenced by the on-the-job learning process. Flexible craftsmanship was perceived as a kind of competence, something people can learn. However, the case studies made it clear that on-the-job learning is not the main factor that influences flexibility. More important than the potential of people to be flexible is their willingness to be so. Flexibility could thus better be defined as the willingness to cope effectively with change, rather than the ability to do so. In the packaging plant, an effort is being made to make shop-floor workers more flexible. Shop-floor workers employed in different positions on the same machine, or on different machines in the same production line, should be able to replace each other when a colleague is ill or on holiday. However, the different positions on a machine or production line represent different levels of craftsmanship and thus also different levels in status. A production manager explained that the willingness of shop-floor workers to be more flexible is limited when these tasks do not match their feelings of status or occupational identity. The fear that their old position is endangered, and the

fear of failure also plays a role. Furthermore, workers fear an unfamiliar social environment, and especially new colleagues and supervisors. At the banks and the Post Office employees are sometimes required to work at another location. Although the extra travelling time may form a significant barrier to flexibility, the fear of a different social environment was often mentioned as a much bigger barrier. In the cheese factory and the textile-printing office also it was stressed that some workers simply do not want to be flexible, because being flexible often means insecurity and investing extra energy in learning other tasks (see paragraph. 4.5 motivation for learning).

### *Critical Reflection*

Respondents were asked not only for their views on the concept of 'flexible craftsmanship, but also for their own definition of 'a good employee' or 'a real craftsman'. It emerged that many respondents, especially in the packaging factory, the cheese factory and one of the banks, mentioned the importance of characteristics such as thinking critically about the whys and wherefores "Why are things organised like this? Can the work be done more efficiently? Why do I work like this?" This definition implies an employee who can distance himself from his work and reflect on it and on the changes that are taking place, instead of one who does what he is expected to do and follows changes uncritically. A personnel manager at a bank underlined the fact that, instead of working harder and harder to meet the increased work pressure, people should in particular learn to work differently. Employees should be able to step back occasionally from their daily routine and devote more attention to self- and time management. A production manager at the cheese factory observed that real craftsmen are not monkeys who can perform tricks but people who contribute ideas towards the process, who reflect on the whys and wherefores, and who can think ahead. A plant manager at the packaging factory commented that real craftsmen can raise work processes and work problems to a higher level and are the employees who like to discuss their knowledge with others. At the organisational level too critical reflection is important. When managers are asked for their definition of 'the learning organisation' they often mention the importance of learning from mistakes. The plant manager of the packaging factory felt that this should not be limited to mistakes inside the company only; complaints from customers should also be handled very carefully. The supervisors of the technical service in the textile-printing factory complained about their mechanics' development. According to them, the mechanics were stuck in hierarchical thinking and did not exercise their own responsibilities sufficiently. As soon as the supervisors tried to delegate responsibilities to them, the mechanics came back to them, asking what they should do. For this reason the supervisors organised a 'wake-up' training, which started by inviting the mechanics to criticise the organisation. Then, the long list of organisational problems that emerged was categorised and reduced to a 'top-seven' by a voting procedure. Subsequently, the problems were assigned to different teams to clarify and to find possible solutions to. This shows the importance they attached to critical reflection, although nobody explicitly mentioned it. Stimulating critical reflection here was a means of improving the performance of both the individual mechanics and the technical service.

This leads one to the conclusion that, for the next phase of this research, one aspect of learning that Marsick and Watkins (1990) distinguished is especially relevant, namely critical reflection. Instead of the concept of flexible craftsmanship, it is rather the concept of critical reflection that may serve as a better, more neutral output measure of on-the-job learning. Moreover, this will lead to a better demarcation of the concept on-the-job learning. The research of Marsick and Watkins (1990) showed that critical reflection enabled people to challenge norms and to examine the assumptions behind their reasoning and actions. They noticed that "people learned best when they were able to ask questions about why they saw the world as they did, whether their thinking was correct, or how they came to believe a perceived truth that they held sacred" (p.220). Critical reflection relates to understanding one's own standards, goals, and interests, and learning about backgrounds, assumptions and performance objectives, aimed at improvement. The concept of double-loop learning that Argyris and Schön (1978) distinguished is also related to critical reflection. Double-loop learning enables workers to identify, question and change the assumptions underlying workplace organisation and patterns of interaction. Workers publicly challenge workplace assumptions and learn to change underlying values. By confronting the basic assumptions behind prevailing organisational norms, values, myths, hierarchies and expectations, workers help prevent stagnation and dysfunctional habits. Brookfield (1987) defined the process of critical thinking as the process by which we detect and analyse the assumptions that underlie the actions, decisions and judgements in our lives. Essentially it has three stages: firstly, becoming aware that these assumptions exist, secondly, making them explicit, and thirdly, assessing their accuracy and validity. Brookfield mentions some characteristics of people who think critically. Critical thinkers display contextual sensitivity, they become aware of how contexts distort the assumptions that we have, and they see that common sense ideas and conventional wisdom are actually the product of a particular time, place and group of people. The ability to engage in perspective-taking is another

indicator that critical thinking is taking place. Perspective-taking involves people in entering another person's head, seeing the world as they see it. Tolerance of ambiguity is another important indicator of critical thinking. Tolerance of ambiguity means that people are able to take multiple interpretations of the same situation and are sceptical when others say that there is only one cause of a very complicated problem. Critical thinkers are also people who seek and explore alternative ways of thinking and acting, and do so without the pressure of an immediate crisis. Furthermore, critical thinkers are people who challenge group-think, that is, ideas that a group has accepted as sacrosanct. This also means that critical thinkers are alert to premature ultimates, invocations to higher values. Finally, critical thinkers acknowledge the fact that change is fundamental to life and that the future is open-ended.

Critical reflection did not emerge to the same extent as a crucial concept in all cases. Some examples of these cases are the call centre, the giro bank and The Post Office, where jobs are so routine that critical reflection in a way is discouraged. A personnel manager at the Post Office stressed only critical reflection that refers to the self. This manager stated that employees with critical self-judgement are able to detect their own weak spots (for example in selling) and then to ask for help. Continuous learning presupposes a critical view of one's own functioning and that of others. According to the personnel manager, this requires an acknowledgement of one's own responsibility for acting and learning as well as a willingness to be vulnerable. However, what did appear was that both these organisations and the people who work in them do benefit from employable employees who ask themselves if they really want to follow the changes in their job or if they would not prefer to look for another job (look at paragraph 4.2). This also implies employees who are critically reflective. A concept such as employability therefore may be seen as a consequence of critical reflection.

Critically reflection seems to be a way of learning that brings together the interests of both employers and employees, although some employers prefer employees whose critical thinking is positive, and only want employees to reflect critically on themselves, instead of on the organisation, or restrict the importance of critical reflection on the organisation only to higher levels of management. It seems that the extent to which organisations will acknowledge the importance of critical reflection and benefit from it depends on the characteristics of the organisation, as discussed in paragraph 4.6. The benefits of critical reflection to the employee lie in the critical reflection itself, which gives him a feeling of self-determination and which will help him in career development. For the employer, however, it is the economic value of critical reflection that is of importance. Critical reflection is essential for continuous improvement, quality management and innovation - all matters that are vital in order to survive in a competitive economy.

### *Motivation for Learning*

Learning often means that some aspects of a job will change, and that employees will have to leave behind a way of working that they have been accustomed to, sometimes for twenty years or more. This often proves very difficult for people and takes a lot out of them. This applies especially to shop-floor workers who are selected merely to carry out tasks and follow rules that have been set by others, and not to think too much for themselves. All the cases made it clear that learning not only produces benefits but also entails a great many costs (time, energy, and loss of security if learning was a consequence of job changes). This means that employees need a motivation for investing in the learning process.

The importance that people attach to work in their lives is also of influence on their motivation for learning. Many of those who were interviewed made a distinction between employees who work for the money and then go home to continue their lives, and employees for whom work is more important. A personnel manager at a bank said that some employees simply do not want to invest in their work and to exploit their talent because they see challenges in their personal life, rather than in their working life. Employees at the giro bank and the call centre are mostly women who started working because it was an undemanding job that was easy to combine with their family life.

Since informal on-the-job learning and working are inseparable, the motivation to learn will correspond to the motivation to work. In the motives that emerge from the case studies, it is possible to recognise motivational factors from the theory of self-determination (Deci and Ryan, 1985, Deci and Flaste, 1995) that was validated in business facilities (Deci, 1975) and revalidated by Kleinmann and Straka (1996) This theory expects three motivational factors in workplace conditions to have a distinct impact on employee interest in self-directed learning, namely experience of social integration, experience of autonomy and experience of competence.

People feel socially integrated if they believe that their work is acknowledged by their colleagues and superiors and if they feel integrated in the community of work. One factor that would seem to be an important motivation for both work and on-the-job learning is the fact that work is a social event; the operators and the

employees of the giro bank considered this a central aspect of work. The fact that colleagues enthuse each other with a learning attitude was underlined by the production manager at the packaging company. It is, according to him, very important that shop-floor workers have a place that is pleasant, where they can have fun together. On the other hand, employees often resist change because it implies that they will have to work with different people. A bank employee spoke about the days before bank opening hours were extended, when everybody stayed behind after work to let off steam. She always found these times very enjoyable, but nowadays, because opening hours have been extended, everybody rushes straight home after work. This also means that an important moment of collective reflection has disappeared.

People experience autonomy when they have the feeling that they have the scope to act independently and to carry out their work according to their own planning and insights. An operator at the call centre said that the changes taking place in her job are going to make her feel more and more like a robot, which is very demotivating. What was important for her was to 'put something of oneself into the work', for example, by having a pleasant conversation with a customer, or by being able to use her own knowledge and intelligence in the search process. It became apparent from interviews with mechanics in the cheese factory and in the textile-printing factory that the freedom to concentrate work on aspects that have their special personal interest can be a very powerful motivation for working and informal learning. Each mechanic has his own professional hobby and they generally make a division of labour according to this personal interest and expertise. One mechanic in the cheese factory spent many hours of both his leisure time and his time at work writing manuals for computer software so that his colleagues could use them. The fact that employees working for the accommodation services at a bank (which are concerned with moving and arranging workrooms) are able to move freely about the whole building as they see fit gives them a very strong feeling of autonomy, especially when they compare themselves with the desk clerks, who have to sit 'imprisoned' behind their desks all day.

People feel competent if they believe that they can carry out their work successfully and effectively. The work of a packing team supervisor at the packaging factory is quite low skilled, but because her team is the last one in the production line before the products go out to the customer, she feels a sense of achievement when she is able to arrange things at the last minute. A bank employee reported feeling stimulated by the score lists of products sold that are made for each employee, because it gives her an understanding of her own effectiveness. One operator feels successful when she is able to meet the norms for the number of calls handled per hour.

### *The Influence of Organisational Culture on Critical Reflection*

The managers at the cheese factory, the packaging factory and the bank all stressed the fact that the ability to reflect (critically) on one's own performance cannot be seen as an independent variable, since it depends partly on the organisational culture the employees were 'raised' in and the autonomy they have always experienced.

In the cheese factory both the department manager and the foreman reported that shop-floor workers had traditionally been made very dependent on their foreman. If people ever made a mistake they were never trusted again. This can be explained by the fact that the cost of mistakes in the process was very high. When later, more responsibilities were given back to the shop-floor workers, this caused many problems. Direct managers play an important role in this, as they often only think about short-term benefits (running the process with as few problems as possible).

The failure of many attempts to introduce the concept of teamwork may also be ascribed to the fact that many shop-floor workers have learned 'not to think', was the view of a senior training advisor at a bank. At the giro bank employees got so used to their very routine jobs that they were not even able to pass an exam on simple safety training (what to do in the event of a robbery). This was because they simply could not imagine that a robbery might take place. ('In all the 20 years I have worked here no such thing has ever happened.') This leads one to the conclusion that some organisational factors will foster critical reflection, while others will suppress it. Marsick (1987) also argues that some workers have been so conditioned not to raise questions that they may not know how to begin to think critically.

Organisations can foster critical thinking by explicitly rewarding it. At some factories (the packaging factory and the textile-printing factory) a suggestions box is in use. The plant manager at the packaging factory revealed, however, that this does not always work well. In addition to the good ideas that deserve to be rewarded, many suggestions are being submitted out of frustration, or as a result of communication problems with the foreman. "Good teams do not need a suggestions box; they immediately turn ideas into improvements". The plant manager believes that coaching by the foreman is far more effective in fostering critical reflection. A climate of great attentiveness, in which workers with good ideas are (publicly) praised, is vital to the self-confidence that

workers need. This will enable those with creative ideas also to function as a role model for their colleagues. The packaging factory organises a special day each year when teams with good ideas regarding improvements are publicly praised.

It is possible to stimulate critical reflection on the shop floor by involving workers in quality assurance systems. The supervisor of the packing department – the last unit in line – at the packaging factory, has a rather routine job, but ever since she became responsible for quality on her unit she has had to take many decisions concerning product quality. The department manager in the cheese factory stressed that involving workers in formulating the procedures is especially important for the learning process. In this factory one manager made the workers responsible for the quality assurance procedures, while the manager of another department did this all himself. The department manager reported that this has produced two different kinds of culture on the shop floor that will remain even after the managers concerned have left. Since employees have learned to think and function independently, it will be easier for the next manager to give them these responsibilities, and so on. Brookfield (1987) put it this way: “when criticism of prevailing workplace norms is encouraged in some form of collective forum, as is advocated by proponents of quality circles, leaps of imagination that take companies beyond currently accepted modes of production are more likely to take place. Critical thinking, then, can be seen as the central element in improving organisational performance.”

Critical reflection means learning from mistakes and not being afraid to look at one's weak spots. A personnel manager at a bank reported that ‘tolerance towards making mistakes’ had recently become company policy and that showing one's vulnerability was being stimulated. The fact that this policy is quite hard to put into practice in a bank, where large amounts of money may be involved, is demonstrated by an employee of that bank, who said that she had not even noticed this shift in company policy. A training manager in the bank also said that showing one's vulnerability is not very easy in a culture where people have their knowledge and competencies to thank for their positions. Many employees hesitate to share their knowledge with others or to ask their colleagues for help (and admit that they themselves do not know). Allowing other people to say what they think of you is a matter of culture, and implies that there has to be a non-threatening environment. The training manager reported that there is no such culture in the Post Office, which can be explained by the hierarchical, civil service culture that had prevailed for so long. Nowadays employees who feel responsible for the whole course of business at a post office are sought after. Good employees, for example, will go and check that there are no packets of chips left on the cash dispenser, or take appropriate steps when promotional campaigns start before the leaflets are available. Each employee has to act as an entrepreneur, but since the organisation has always been very large and bureaucratic, employees have never learned this kind of behaviour. They hide behind their formal tasks and simply pass their responsibilities on to somebody else.

It is remarkable that many of the employees interviewed said that they did not get enough scope to gain a good understanding of the organisation as a whole. This means that workers often do not know in what kind of framework they are operating, which limits their potential for ‘double-loop’ learning. Communication between different departments of an organisation, including shop-floor workers, plays a vital role in this. In the textile-printing factory efforts are being made to make a transition from ‘thinking in departments’ to ‘thinking in processes’. Workers from all the different supportive departments should become ‘partners’ of the managers; even other companies may be made partners. The technical department is now cooperating increasingly with the production line; mechanics are becoming more involved in the product, while shop-floor workers are carrying out more and more of the repairs themselves. Communication, however, is a significant problem area in this partnership-thinking. Efforts are being made to have shop-floor workers cooperate with the Research and Development department in innovation processes. One important problem area, however, is the fact that the researchers, who work at a professional level, often think and talk in too abstract a manner to communicate with the workers on the shop floor.

Many supervisors (at the call centre and the textile-printing factory) also stress the importance of communicating company policy to the shop floor. Workers will only be motivated to learn new tasks if they are persuaded by cogent arguments of the necessity for change. A manager at the bank said that as long as new products really are better, bank employees do not mind learning about them, but when they are introduced merely because the competitor also has them, employees grow tired of learning.

The nature of work also has a significant effect on the learning culture. In both the cheese factory and the textile-printing factory the electricians appear to communicate much more with each other than do the mechanics, due to the fact that the work of the former is invisible. The way the work is organised also plays a role. The operators said that they like to think about the mistakes in the computer system they work with, or to invent smart tricks to solve particular problems. However, as soon as the next call comes in, that problem disappears from their computer screen and cannot be retrieved. They find this very frustrating.



## Conclusions

The results presented above demonstrate that the concept of 'flexible craftsmanship' is not an effective measure of output for informal on-the-job learning because it takes into account only the employer's view of 'ideal employees'. These results also lead one to the conclusion that a certain form of on-the-job learning (namely critical reflection) may itself serve as a measure of output for further research. This form of learning may be seen not only as a means of achieving a particular objective, but also as a goal in itself, since, according to many respondents, an important characteristic of professionals or 'good' employees is that they learn in a critically reflective way. One other advantage of opting for critical reflection is that this will ensure that the concept of on-the-job learning is demarcated more clearly. Another conclusion is that the critically reflective learning processes of shop-floor workers are influenced by such organisational factors as autonomy, rewards for innovative ideas, tolerance of making mistakes and vulnerability, scope for understanding the organisation as a whole, communication to the shop floor. The next phase of the project will focus on the effect that organisational factors have on critical reflection. Although the prompts to critical thinking most often identified are crises and disorientating dilemma's, it is a mistake to regard critical thinking as occasioned only by trauma (Brookfield, 1987). Moments of sudden insight or self-awareness can also be triggered by events that are fulfilling rather than distressing. It is assumed that part of the effect that organisational factors have on critical reflection will be indirect, via the three motivational factors Deci and Ryan (1985) mention (experience of autonomy, experience of competency and experience of social integration). The characteristics of critical thinkers as mentioned by Brookfield (1987) will be used to make it possible to measure the concept of the critically reflective worker.

## Contribution to New Knowledge in HRD

As the transfer of training is a very complex matter, HRD should focus more on how to make use of the informal learning experiences that derive from everyday working life, instead of on formal training. Garrick (1998) states that the debate on informal learning within the fields of management and HRD practice has tended to focus on how informal learning can be enhanced, or what can be done to enable individuals to learn more 'efficiently and effectively' in their day-to-day work. According to Garrick, however, there has been little critique of the uses of informal learning, or of its construction within the master discourse of economic rationalism. This research attempts to break through the biased view of learning organisations taken by management, by illuminating the role of both management and shop-floor workers, and focusing on the value of critical reflection to both the organisation and the individual. Another contribution of this research to new knowledge in HRD is that it focuses not on critical reflection of professionals, but rather on that of shop-floor workers.

## Literature

- Argyris, Ch. and Schön, D.A. (1978) *Organisational learning: a theory of action perspective*. Addison Wesley, Reading Massachusetts
- Brookfield, S.D. (1987) *Developing critical thinkers*. San Francisco, Jossey-Bass Publishers.
- Deci, E.L. and R.M. Ryan (1985) *Intrinsic Motivation and self-determination in human behavior* Plenum Press, New York.
- Deci, E.L. (1975) *Intrinsic motivation*. New York. Wiley
- Deci, E.L. & Flaste (1995) *Why we do what we do. The dynamics of personal autonomy*. New York: Grosset/Putnam
- Garrick, J. (1998) *Informal learning in the workplace. Unmasking Human Resource Development* London: Routledge
- Kleinmann, M. & Straka, G.A. (1996) Selbstlernbereitschaft und erlebte Arbeitsplatzbedingungen von Beschäftigten in kaufmännisch-verwaltenden Berufen. Ergebnisse einer empirischen Pilotstudie. In: P. Sloane: Tagungsband zur Herbsttagung 1996 der Kommission Berufs- und Wirtschaftspädagogik der DGfE in Kassel.
- Marsick, V. *Learning in the workplace: Theory and practice*. London: Croom helm, 1987.
- Marsick, V.J. & Watkins, K.E. (1990) *Informal and incidental learning in the workplace*. London: Routledge.
- Swanborn, P.G. (1996) Case study's. Wat wanneer en hoe? Amsterdam/Meppel: Boom.
- Thijssen J.G.L. (1995) *Leren, leeftijd en loopbaanperspectief (learning, age and career prospect)* dissertation Katholieke Universiteit Brabant.
- Yin, R.K. (1994) *Case study research: design and methods*, Thousand Oaks, Sage Publications