

Practices of Competence Development in the Workplace: Relations between learning environments, strategies and learning outcomes in SMEs

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Abstract

The paper is focused on the relations between learning environments, strategies for competence development and learning outcomes and is based on a research project on competence development in SMEs, funded by the European Social Fund (ESF, Objective 3). The presented results show a clear relation between the character of the learning environment and the strategy for competence development used by the SMEs, and between the character of the learning environment and reported learning outcomes.

Introduction

At least at a rhetorical level, there is a widespread consensus among researchers as well as policy makers about the importance of workplace learning both from a perspective of lifelong learning and from a perspective of competitiveness and innovativeness in firms (Ellström, 2001; Archibugi & Lundvall, 2001). However, in spite of this consensus regarding the importance of work-based learning, research-based knowledge about processes of learning at work, the preconditions for such processes and the learning outcomes is quite scant. Furthermore, research in this field tend to have a bias towards studies of large enterprises (Hill, 2004), while there are relatively few studies on competence development and learning in small and medium-sized enterprises (SMEs) (Coetzer, 2006).

Considering available studies of competence development in SMEs, a number of general observations can be made. First, there is a wide range of practices with respect to competence development in SMEs. Competence development takes place in many different forms and under diverse conditions (Kitching & Blackburn, 2002; Matlay, 2002). Second, SMEs differ with respect to the importance they attach to competence development, and also with respect to how they perceive their opportunities to take on competence development (Hill & Stewart, 1999; Ram, 2000). Third, previous research on competence development in organizations has underlined the need to consider the importance of contextual conditions in order to reach a more detailed understanding of why and how competence development is initiated and accomplished (Jackson & Schuler, 1995; Salas & Cannon-Bowers, 2001). An important distinction is that between external and internal conditions for competence development. Among external contextual conditions, available studies point to the importance of factors such as market position, business sector, the pace of technological and competitive development, legislation, etc. Likewise, several internal contextual conditions have been

regarded as important, for example organizational structure, work organization, organizational culture and “the learning climate” (Ellström, 2004 a; Ellström & Nilsson, 1997; Jackson & Schuler, 1995; Nordhaug, 1992).

In a previous study on strategies and conditions for competence development in SMEs, we were able to demonstrate the importance of both external and internal conditions as driving forces for competence development efforts in SMEs (Gill, Kock & Ellström, 2005). In line with previous research, a distinction was made between external conditions related to factors such as competitive pressure and customer demands, and internal conditions related to the work organization in a broad sense. The study showed a significant relationship between the rated strength of contextual conditions and the type of strategy used by the company: organizations that rated the contextual conditions as less important for competence development, more frequently used what was called a formal strategy, based on formal courses in or outside the workplace, while firms evaluating the contextual conditions as being of major importance for competence development used an integrated strategy for competence development, that is, a strategy based on formal courses in combination with changes of the work organization.

In this paper we will pursue these issues a bit further. Specifically, we will focus on what strategies are being used, under what conditions and with what outcomes. The following three questions are addressed:

- 1) How are different aspects of the learning environment related to the strategies for competence development used by the SMEs? That is, what types of strategies are used under what environmental conditions?
- 2) How are different strategies for competence development and aspects of the learning environment related to perceived learning outcomes?
- 3) What is the relative importance of the learning environment and the strategies for competence development in relation to perceived learning outcomes?

This study is based on a research project on competence development in SMEs, funded by the European Social Fund (ESF, Objective 3). The common definition of small and medium-sized enterprises (SMEs) in Sweden is the definition recommended by the European Commission (CEDEFOP, 2001) and is based on the number of employees. According to this definition small enterprises have 10-49 employees and medium enterprises have 50-249 employees. Usually this definition comprises private enterprises, however, in this study we also include, in line with the wider definition used by ESF, public workplaces. The study is based on data from 14 SMEs, representing private enterprises and public organizations, collected by questionnaires among employees, managers/owners and union representatives.

Conceptual Framework

In the following section, some basic concepts and a model for analyzing data concerning possible relations between learning environments, strategies for competence development and learning outcomes are presented.

Strategies for Competence Development: Formal and Integrated

A traditional way to define competence development is to describe it as an overall designation for the various activities that can be used to affect the supply of employee competence and

skills on the internal labour market. To be more specific, it may refer to a wide range of activities, including education and training of employees (e.g. by means of internal or external courses), but also to changes of the work organization in order to further employee learning in work (e.g. through job rotation, team organization or systems for continuous improvement). Competence development can refer to one or more of these activities or systems of activities. In this connection it should be pointed out that the term competence development is sometimes also used to denote the individual learning processes through which competence is developed. A distinction can therefore be made between an organization-related and an individual-related meaning of the term competence development.

Furthermore, competence development may refer to activities that are planned and organized in order to foster learning as a primary aim, but also to activities that have learning as a secondary and perhaps unintended outcome. Consequently, while studying competence development in organizations it is possible to use the degree of planning and organization as a distinction between different activities. Thus, a distinction can be made between two broad categories of activities. First, formal learning activities by means of internal or external courses that are deliberately planned and organized as means for workplace learning. These activities may or may not result in a certificate, a diploma or a mark that is recognized by the educational system or on the external labour market. In many cases courses are carried out to meet more specific needs at the workplace, and do not result in some kind of formally recognized certificate or mark¹. Workplace learning through formal activities are usually financed by the employer and carried out during working hours. Second, informal learning activities, for example, learning through participation in development projects at the workplace, staff-meetings, job rotation, team-based work etc. In general terms informal learning means learning while you are primarily focused on performing another task. Informal learning activities are generally characterized by a low degree of planning and organizing from the perspective of learning.

This distinction between formal and informal learning activities can be related to the distinction between two perspectives of learning sometimes called ‘learning as acquisition’ and ‘learning as participation’ (Felstead et al., 2005; Sfard, 1998). In line with an acquisition perspective, formal learning activities are assumed to result in knowledge acquisition through planned and organized educational activities, where the outcomes of learning are viewed as products that can be identified, measured and in certain cases be awarded by diplomas or marks. In contrast to this, learning through informal activities is assumed to take place as an aspect of on-going work processes where people carry out certain tasks in interaction with others and with the use of certain tools, materials etc. Thus, this is basically consistent with the view of learning emphasized from a participation perspective.

In two previous studies, we have been able to empirically identify two types of strategies for competence development, called formal and integrated strategies (Ellström & Nilsson, 1997; Gill, Kock & Ellström, 2005). The formal type of strategy was mainly based on courses for the employees in or outside the work place and focused primarily on the individual employee and his/hers ability to perform the daily job on a regular basis. What was called an integrated strategy was based on the use of internal and/or external courses in combination with changes of the work organization. Furthermore, this type of strategy had a focus on competence

¹ As used here the notion of formal learning activities is not reserved for learning activities (e.g. a course) that is awarded by some kind of certificate, diploma or credit. Thus, we do not make a distinction between formal and non-formal learning, where non-formal learning refers to activities that are not officially recognized or awarded credit.

development of the individual employee as well as on the development of the company/organization. The notion of strategy for competence development as used here does not imply a conscious or deliberate process of planning that result in a choice of specific practices (e.g. forms or methods) for competence development on the part of the company. Rather, the notion of strategy is used in the sense proposed by Mintzberg (1994), that is, as referring to strategies as emergent patterns of practices within a certain context, irrespectively of the extent to which these practices are the result of deliberate processes of planning and decision-making.

Learning Environments: Enabling and Constraining

An important scope of this paper is to identify conditions of the workplace which influence the extent to which it can be viewed as an environment which constrain or enable processes of learning at an individual-, group- or organizational level (Ellström, 1997; 2004 b). These conditions can be characterized as structural, that is, as constituted by material, cultural or social structures in the organization, or related to the individuals' background and subjective conditions, actions and interaction. Both Ellström (1997; 2004 b) and Fuller & Unwin (2004; 2006) have identified different conditions of a learning environment which enables or constrain, not only the extent of learning, but also the quality of learning. Concerning the quality of learning, Ellström (1997; 2004 b) makes a distinction between adaptive and development learning, while Fuller & Unwin (2004; 2006) makes a similar distinction between restrictive and expansive learning.

Ellström (2004 b) presents various conditions in organizational settings that are important for learning, and depending on how these conditions predominate in a certain organizational context it is possible to relate these conditions to adaptive or developmental learning. Examples on conditions are:

- The learning potential of the work tasks.
- Opportunities for feedback, evaluation and reflection on outcomes of work actions.
- The formalization of work processes, including a work organization supportive to cooperation and learning.
- The employees participation in handling problems and developing work processes, including participation in the planning and accomplishment of competence development efforts.
- Learning resources, including management support for competence development.

In relation to these conditions, an enabling learning environment would be characterized by complex, demanding tasks with high learning potential, opportunities for feedback, evaluation and reflection on outcomes of work actions, learning resources (including management support), etc. In the case when these conditions are less favorable, we can denote this as a constraining learning environment, characterized by low learning potentials of the work tasks, restricted opportunities for feedback, evaluation and reflection on outcomes of work actions, constrained learning resources (lack of management support), etc.

Our distinction between constraining and enabling learning environments is in certain respects parallell to the distinction made by Fuller & Unwin (2004; 2006) between restrictive and expansive learning environments. A restrictive learning environment is characterized by less stimulating work tasks, barriers to learn new work tasks, lack of organizational support, etc.

while an expansive environment is characterized by stimulating work tasks, opportunities to learn new work tasks, and manager's recognition of learning.

In this paper we focus on the character of learning environments of the studied SMEs by studying how they are perceived by the respondents in each company. As argued above, a distinction is made between two types of learning environments, that is, learning environments that are characterized as constraining and enabling. An enabling learning environment is defined in terms of high qualification requirements, stimulating potentials for learning at work related to the content and/or organization of work, a supportive management for learning and a higher degree of cooperation within and between working teams. In contrast to this, a constraining learning environment is characterized by lower qualification requirements, less stimulating potentials for learning at work related to the content and/or organization of work, a less supportive management for learning and a lower degree of cooperation within and between working teams.

Learning Outcomes

Another important concept in this paper is what we refer to as learning outcomes from competence development. The question of whether competence developments in fact result in any measurable outcomes for individuals, teams and organizations, is constantly under debate. During the recent decade there has been an increasing interest among researchers and practitioners alike, not only whether competence development is important to individual and corporate effects, but also if (and how) different systems of HRM and competence development practices can contribute to increased individual and organizational performance (Guest, 1997; Wright & Boswell, 2002). Research on the effects of competence development in organizations has been described as a field in need of further theoretical and empirical work. Evaluations of competence development in organizations have been described as overwhelmingly rational, micro, based on a technical-rational perspective and designed to evaluate how trainees fulfill predetermined goals (Klein & Ralls, 1997). In this respect, a vast majority of the used methods are based on Kirkpatrick's typology (Kirkpatrick, 1976, 1998), which separates four levels of effects: reactions, learning, behaviour and results (turnover, productivity, etc.). The three first levels of effects are usually analyzed on the individual level; results are generally analyzed on the organizational level (c.f. Noe & Schmitt, 1986).

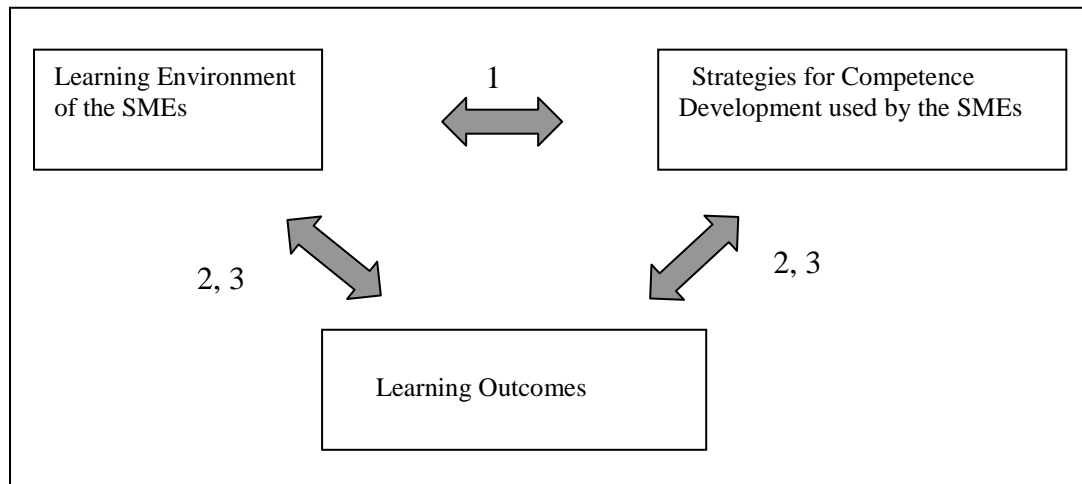
Outcomes from competence development activities can be quantified in several ways and interpreted from several perspectives. Learning outcomes can be regarded as short or long term, be specific or general, intended or unintended, desirable or undesirable, etc. Furthermore, as competence development activities in organizations show a great variation, typologies likewise Kirkpatrick's are difficult or inappropriate to use. Several alternative methods have been proposed; the need to expand from competence development as acquisition and focus on the social conditions and relations of production (learning as participation; Felstead et al. 2005), the need to consider motivational and attitudinal outcomes (Kraiger, Ford & Salas, 1993), and to view outcomes of learning as contingent on interactions, trainee characteristics and work environment features (Kozlowski & Salas, 1997).

In this paper learning outcomes refers to how the individual evaluate the outcomes of different competence development activities. The questions in the survey on individual learning outcomes were directed towards changes of professional competence, ability to carry out new work tasks, motivation for learning, increased holistic view of the business and changes of self confidence.

Model of Analysis

An important point of departure for this paper is the relations between the learning environment of the firm, the strategies used for competence development and the outcomes from competence development. We view these relations as complex and non linear, involving several factors and conditions. In figure 1 (below) we propose a model of analysis that will be used as a guide for analyzing data.

Figure 1. Model of Analysis



Research on learning and competence development in organizations has moved in direction towards increased complexity. Learning outcomes are indeed contingent on many factors. Rather than departing from a linear model, we have studied competence development activities in the workplace as interplay between the learning environment of the workplace, the strategies of competence development and the learning outcomes. The learning outcomes from competence development efforts can from this perspective be seen as contingent on the learning environment as well as on the strategies for competence development used by the SMEs. The three previously presented research questions are indicated as numbers (1, 2, 3) in the figure. However, and this is an important notion, the above model is not a complete model, several other important aspects are not taken into consideration. This is evident, especially concerning factors and conditions tied to the individual: motivation to learn, previous experiences of competence development, etc. are not included in this study.

Methods

The following results derive from a completed research project with the overall aim of studying learning and development processes in SMEs. The study consists of 14 SMEs that all received support from the European Social Fund, namely the Objective 3 programme. According to the legislative framework, the subsidiaries from the Objective 3 Programme should target competence development of employees and/or organizational development in SMEs. The studied SMEs were all in a late phase of cooperation with the Objective 3 Office: they have completed their planned competence development activities within a period of 3-6 months. The selected companies vary in size, from 10 to 42 employees. Table 1 presents background profile of the sample.

| Background of respondents | <i>n</i> |
|---------------------------|----------|
| <i>Ownership</i> | |
| Public | 35 |
| Private | 116 |
| <i>Type of production</i> | |
| Manufacturing | 69 |
| Service | 82 |
| <i>Staff composition</i> | |
| Female | 93 |
| Male | 58 |
| <i>Position</i> | |
| Managerial | 20 |
| Non-managerial | 131 |

Table 1. Background of respondents.

The collection of data is based on a survey to managers and employees in the 14 SMEs. The survey was distributed to all the participants (both managers and employees) in the 14 SMEs. We were able to receive a total of 151 responses, with a response rate between 57-100 percent per SME regarding the personnel who were directly involved in the local competence development projects. The survey included the following areas:

- The learning environment of the enterprise
- Participation of employees in planning and achieving competence development
- The roles of specific actors such as managers and consultants
- Accomplishment of the competence development programme
- The perceived learning outcomes from the competence development.

The classification of the learning environment of each enterprise was done in two steps. In a first step two broad categories of learning environments (enabling and constraining) were constructed, based on qualification requirements, potentials for learning at work related to the content and/or organization of work, management support for learning, teamwork and work across organizational borders. In a second step the learning environment of each SME were classified, based on the respondents' evaluation, as primarily enabling or constraining.

The survey-questions used in the analysis were all measured with Likert-type scales. The scales of each question were normalized, and were combined to measure the learning environment and the learning outcomes. The categorization of the competence development strategies were based on the qualitative interviews with management and employees (cf. Gill, Kock & Ellström, 2005). In order to explore the learning environment, an index on the learning environment was constructed, based on four groups of variables, namely: qualification requirements (5 items), opportunities to learn in the daily-work (one item), management support (one item), and teamwork and work across organizational borders (two items). In a first step, all variables were normalized and the composite measures were transformed into Z-scores. By using the median as a divider, we were able to categorize the

index of the learning environment into two groups, an enabling learning environment group and a constraining learning environment group.

The learning outcomes on the individual level were measured from five variables concerning changes of:

- professional competence
- ability to carry out new work tasks,
- motivation for further learning and competence development,
- the overall view of the business, and
- self confidence.

Independent samples t-test was used to answer the questions (1) and (2). In order to answer question (3), we used an ANOVA 2 x 2 factor design where the two independent variables (the learning environment of the workplace and the strategies for competence development) were analyzed simultaneously in a single analysis. From the results of this analysis we were able to further explore the importance to of the learning environment and the strategies for competence development in relation to the perceived learning outcomes.

The presented results are foremost based on a statistical analysis of empirical data, none the less the study undertaken has an explorative nature, and the results should be viewed as interesting indications on the studied relationships, rather than empirically grounded conclusions based on of cause-effect relations.

Results

In the following section we will present results concerning the relations between the learning environment of the workplace, the strategies of competence development used by the SMEs and the learning outcomes, and we start from the first research question.

How are Different Aspects of the Learning Environment Related to the Strategies for Competence Development used by the SMEs?

Our first question concerns the relation between the learning environment of the workplace and the strategies for competence development. In order to analyze the relation between different aspects of the learning environment and the strategies for competence development used by the SMEs, four groups of variables which measure the learning environment were used: qualification requirements, the opportunity to learn in the daily-work, management support and teamwork and work across organizational borders (se table 1, below). Independent samples t-test was used to identify significant differences between the two strategies.

Table 1. The Learning Environment and the use of Different Competence Development Strategies

| Dimensions of the Learning Environment | Integrated Strategy | | Formal Strategy | | t |
|--|---------------------|------|-----------------|------|--------|
| | M | SD | M | SD | |
| Qualification Requirements with Respect to: | | | | | |
| ▪ Ability to work independently (1) | 2.49 | .75 | 1.81 | .81 | 4.89** |
| ▪ Quality awareness (2) | 2.83 | .40 | 2.61 | .62 | 2.14* |
| ▪ Professional competence (3) | 2.75 | .45 | 2.70 | .59 | .50 |
| ▪ Ability to cooperate with other (4) | 2.65 | .48 | 2.43 | .62 | 2.08* |
| ▪ Ability to participate in development projects (5) | 2.65 | .53 | 2.48 | .66 | 1.70 |
| Opportunities to learn in daily work (6) | 3.30 | .97 | 2.93 | 1.07 | 2.03* |
| Management support (7) | 3.71 | 1.09 | 3.40 | 1.27 | 1.53 |
| Teamwork and work across organizational borders | | | | | |
| ▪ Teamwork (8) | 2.65 | 2.14 | 1.97 | .86 | 2.69* |
| ▪ Work across organizational borders (9) | 2.15 | .75 | 1.83 | .88 | 2.19* |

*p<.05, **p<.01

1. Variable 1-5 are based on the response given to the question: ‘To which degree has the demands on your competence been affected during the recent years, concerning:’. The table provides the mean value of the responses given, with 3 = ‘The demands has increased’, 2 = ‘The demands is unchanged’, 1 = ‘The demands has decreased’.
2. Variable 6 is based on the responses given to the question: ‘How would you consider the possibilities to learn and develop in your daily work?’ The table provides the mean value of the responses given, with 5 = ‘Very large’, 4 = ‘Fairly large’, 3 = ‘Both large and limited’, 2 = ‘Fairly limited’, 1 = ‘Very limited’.
3. Variable 7 is based on the response given to the question: ‘To which degree, supports the management an increase of your competence?’ The table provides the mean value of the responses given, with 5 = ‘To a very high degree’, 4 = ‘To fairly high degree’, 3 = ‘To a both high and low degree’, 2 = ‘To fairly low degree’, 1 = ‘To very low degree’.
4. Variable 8 and 9 are based on the response given to the question: ‘To which degree is following measures used in order to increase your competence?’ The table provides the mean value and the standard deviation of the responses given, with: 4 = ‘Fully’, 3 = ‘Largely’, 2 = ‘Partly’, 1 = ‘Not at all’.

The overall analyses of the data demonstrate that, even if the differences in exact figures are small, the mean-value of the learning environment variables is systematically higher among the SMEs which use an integrated strategy. When studying the variables separately it is possible to find six (of ten) significant differences between the two strategies, which support this finding. The identified variables are: the ability to work independently ($t(148)=4.89$, $p<.01$), quality awareness ($t(148)=2.14$, $p<.05$) and the ability to cooperate with other ($t(148)=2.08<.05$), the opportunity to learn in the daily work ($t(147)=2.03<.05$), my work is organised in teams ($t(143)=2.69<.05$) and organizational boundary crossing ($t(137)=2.19<.05$). Turning to management support, The SMEs using an integrated strategy display a higher mean compared with the group using a formal strategy. However, this difference is not significant.

These findings indicate that there is an important difference between SMEs using an integrated strategy and SMEs using a formal strategy: namely the character of the learning environment. Turning back to the previously made distinction between a constraining learning environment and an enabling learning environment, the SMEs using an integrated strategy for competence development appears to have a more enabling learning environment compared to the SMEs using a formal strategy. Thus, the presented results show that the character of the learning environment has importance whether the SMEs will use a formal strategy or an integrated strategy. In empirical terms, this means that increased qualification requirements, opportunities to learn in the daily work and teamwork and work across organizational borders, increases the probability for the single SME to use a strategy based on the use of courses in combination with for example changes of work organization. By contrast, a more constraining learning environment appears to increase the probability of using a competence development strategy based on courses for the employees in or outside the workplace.

How are Different Strategies for Competence Development and Aspects of the Learning Environment Related to the Perceived Learning Outcomes?

So far we have established a relation between different aspects of the learning environment and the strategies for competence development used by the SMEs. In our second research question our interest is focused on the relation between the learning environment of the SMEs, the strategies for competence development and the learning outcomes. We elaborate this question in two steps, in the first step we examine the use of different strategies for competence development in relation to the learning outcomes, and in the second step we examine the character of the learning environment in relation to the learning outcomes.

In table 2, below, the learning outcomes are put in relation to the use of different competence development strategies.

Table 2. The Learning Outcomes and the use of Different Competence Development Strategies

| Learning Outcomes | Integrated Strategy | | Formal Strategy | | t |
|--|---------------------|-----|-----------------|-----|--------|
| | M | SD | M | SD | |
| Increased professional competence | 2.49 | .87 | 2.19 | .67 | 2.09* |
| Improved ability to carry out new work tasks | 2.30 | .89 | 1.97 | .73 | 2.22* |
| Enhanced holistic view of the business | 2.65 | .87 | 2.07 | .78 | 3.57** |
| Increased motivation for learning | 2.63 | .80 | 2.47 | .80 | 1.07 |
| Increased self confidence | 2.43 | .87 | 2.32 | .76 | .67 |

*p<.05, **p<.01

1. This table is based on the response given to the statement: 'The competence development programme has resulted in:'.
2. The table provides the mean value and the standard deviation of the responses given, with 4= 'I totally agree', 3 = 'I agree to a large extent', 2 = 'I agree to some extent', 1 = 'I do not agree'.

Once again we can observe interesting differences between the integrated strategy and the formal strategy. An overall look at the data displays how SMEs using an integrated strategy

have systematically higher mean-values concerning learning outcomes compared with the SMEs using a formal strategy. If we study the variables separately, it is possible to identify three (of five) significant differences. These three variables of learning outcomes are increased professional competence ($t(134)=2.09$, $p<.05$), improved ability to carry out new work tasks ($t(134)=2.22$, $p<.05$) and enhanced holistic view of the business ($t(135)=3.57$, $p<.01$). From these findings, it is possible to conclude that “strategy matters”. The SMEs using an integrated strategy reported learning outcomes on a systematically higher level compared to SMEs using a formal strategy.

So far we have been able to show that the use of an integrated strategy for competence development appear to result in higher learning outcomes. But what is the relative importance of the character of the learning environment concerning the learning outcomes? We have evaluated the importance of the learning environment by constructing a learning environment index based on the variables measuring the learning environment (the variables are presented in table 1). Prior to constructing the index, all variables were normalized and the composite measures were transformed into Z-scores. By using the median as a divider, we were able to categorize the index of the learning environment into two separate groups, an enabling learning environment group and a constraining learning environment group. The results are presented in table 3, below.

Table 3. The Learning Outcomes and the Character of the Learning Environment (Enabling/Constraining)

| Learning Outcomes | Enabling | | Constraining | | t |
|--|----------|-----|--------------|-----|--------|
| | M | SD | M | SD | |
| Increased professional competence | 2.68 | .78 | 2.07 | .74 | 4.56** |
| Improved ability to carry out new work tasks | 2.56 | .82 | 1.75 | .68 | 6.38** |
| Enhanced holistic view of the business | 2.84 | .81 | 2.05 | .78 | 5.74** |
| Increased motivation for learning | 2.81 | .75 | 2.28 | .78 | 4.02** |
| Increased self confidence | 2.61 | .80 | 2.12 | .81 | 3.54** |

** $p<.01$

1. This table is based on the response given to the statement: ‘The competence development programme has resulted in:’.
2. The table provides the mean value and the standard deviation of the responses given, with 4= ‘I totally agree’, 3 = ‘I agree to a large extent’, 2 = I agree to some extent’, 1 = ‘I do not agree’.

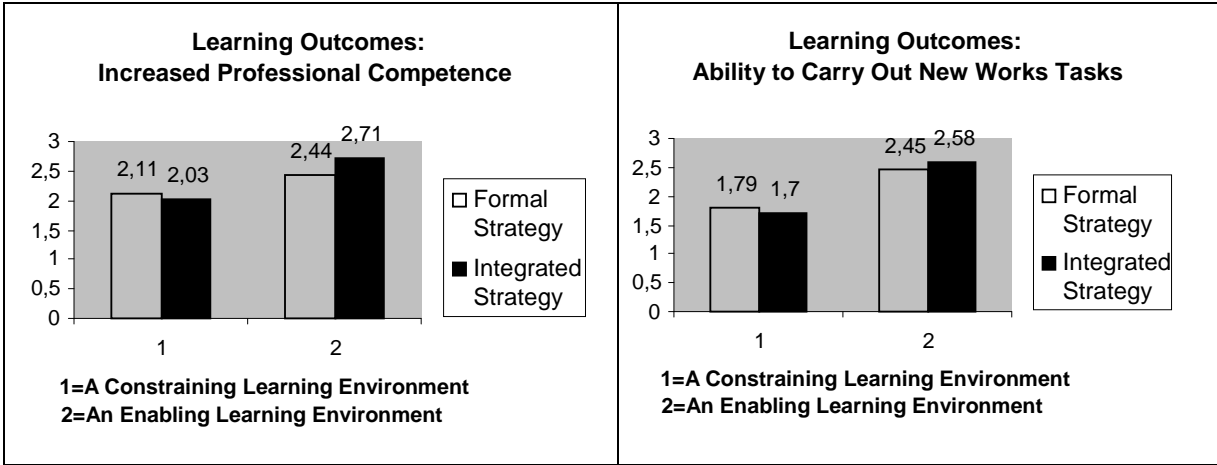
The result shows that the character of the learning environment are important as the mean values of SMEs classified as having an enabling learning environment report a systematically higher mean value on learning outcomes compared to the SMEs classified as having a constraining learning environment . If we study the variables separately, it is possible to identify five (of five) significant differences. The identified significant differences on learning outcomes are increased professional competence ($t(135)=.61$, $p<.01$), improved ability to carry out new work tasks ($t(135)=.82$, $p<.01$) and enhanced holistic view of the business ($t(136)=.78$, $p<.01$), ($t(137)=.53$, $p<.01$) and increased self confidence ($t(134)=.49$, $p<.01$).

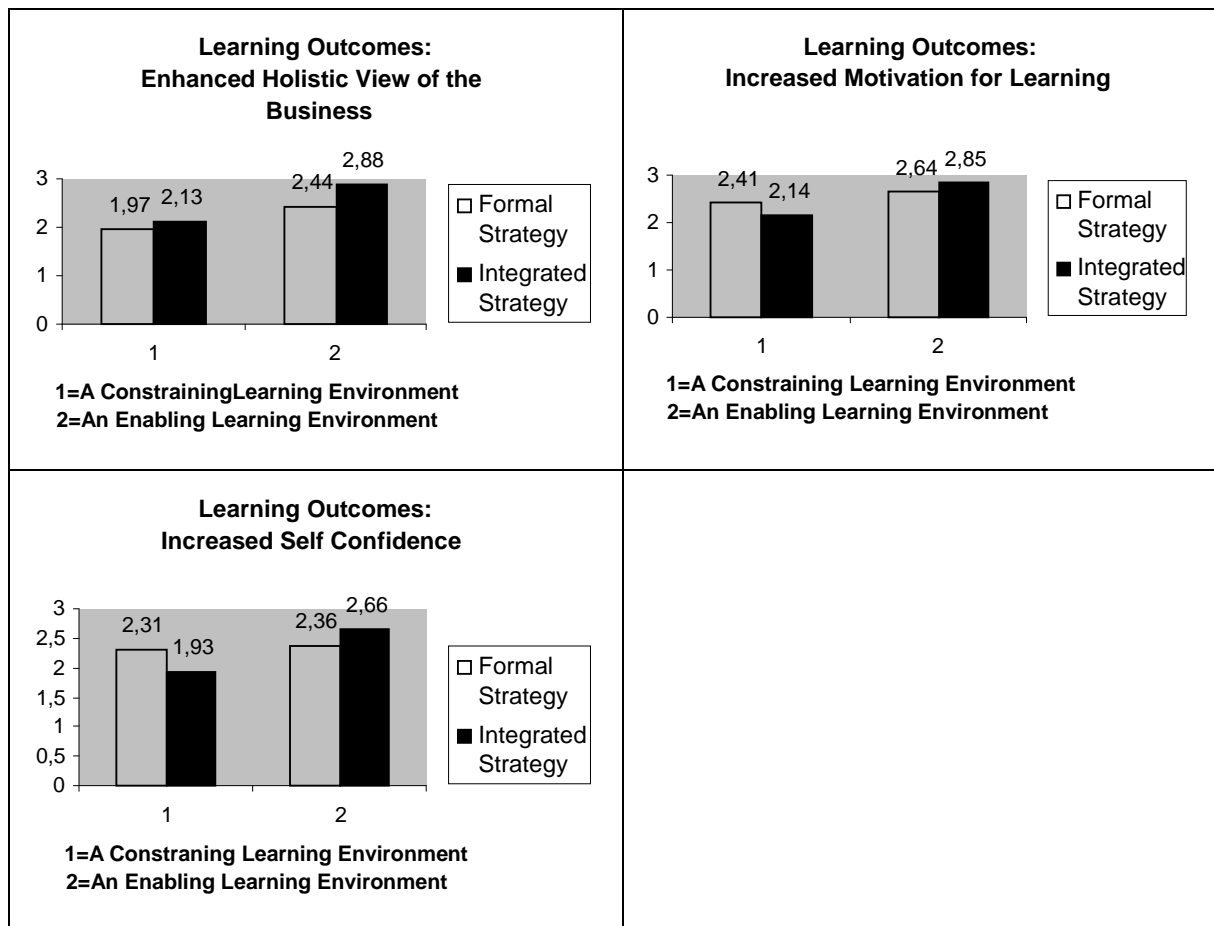
These findings are supportive to the notion of the workplace as an important learning environment. From this perspective the ability to work independently, to engage in cooperative work, to have management support, etc. are important preconditions for favorable learning outcomes among the employees. Before turning to our final research question, another interesting finding can be commented upon. From table 3 it appears that the character of the learning environment, compared to the use of different competence strategies, are more important for the learning outcomes. If we compare the mean values in table 3 to the mean values in table 2, it's apparent that the mean values of the enabling learning environment are higher than the mean values of the integrated strategy. Thus, the character of the learning environment appears to be more important to the learning outcomes. We will return to this finding in the proceeding section.

What is the relative importance of the learning environment and the strategies for competence development in relation to the perceived learning outcomes?

So far we have illustrated that the learning outcomes appear to be connected to the character of the learning environment, as well as to the strategies for competence development used by the SMEs. In our final research question we are interested to investigate the relative importance of the learning environment and the strategies for competence development in relation to the perceived learning outcomes. In order to be able to answer our third question we used an ANOVA 2 x 2 factor design (a fixed-effects model) where the two independent variables (the learning environment of the workplace and the strategies for competence development) and the dependent variable (the perceived learning outcomes) were analyzed simultaneously in a single analysis. The results from this analysis are displayed in table 4, below.

Table 4. Learning Outcomes in Relation to the Learning Environment and the Competence Development Strategies





In the table presented above the perceived learning outcomes (the dependent variable) are put in relation to the two independent variables (the character of the learning environment and the competence development strategies). What is then the relative importance of the learning environment and the strategies for competence development in relation to the perceived learning outcomes? The result shows that there are no significant main effects of competence development strategies in relation to the learning outcomes. However, there are five significant main effects of learning environment in relation to the learning outcomes; increased professional competence ($f(1)=8.64, p<.05$), improved ability to carry out new work tasks ($f(1)=23.02, p<.01$) and enhanced holistic view of the business ($f(1)=12.42, p<.01$), increased motivation for learning ($f(1)=8.60, p<.05$) and increased self confidence ($f(1)=5.53, p<.05$).

The results can be further specified in terms of interesting findings. On the basis of the analysis of the data we can present how different combinations of competence development strategies and character of the learning environment results in different learning outcomes mean values. Common for all these combinations, is that an enabling learning environment appears to be important in relation to the learning outcomes. The combination which presents the highest mean values is the combination of an integrated strategy and an enabling learning environment (five out of five). This supports the conclusion that such a combination increases the opportunity for more favorable learning outcomes. The combination which present the lowest mean values is an integrated strategy and a constraining learning environment (four out of five). If we continue to explore which combinations results in more favorable learning outcomes, the data indicates that both the formal- and the integrated strategy are depending on

being combined with an enabling learning environment (five out of five). Consequently, independently of which competence development strategy being used by the SMEs, a combination containing an enabling learning environment seems to result in more favourable learning outcomes compared with a restricted learning environment (five out of five).

Concluding Remarks

Considering the results presented in the preceding section of this paper, at least the following conclusions can be made. First, there is a clear relation between the character of the learning environment and the strategy for competence development used by the SMEs. Firms classified as having an enabling learning environment are more likely to use an integrated strategy, while firms classified as having a constraining environment are more likely to use a formal strategy. In empirical terms, this means that high qualification requirements, opportunities to learn in the daily work, teamwork and work across organizational borders increase the probability for a company to use an integrated strategy. Based on these findings, one interpretation might be that the enabling character of the learning environment “opens up” for the use of more integrated strategies. One important aspect of the enabling character of the learning environment is the prevalence of external organizational conditions as driving forces for competence development (e.g. competitive pressure, demands from customers, increased qualification requirements), and these external organizational conditions appear to be important to the SMEs that take on more integrated competence development efforts. Concerning the use of a formal strategy for competence development, the SMEs in this group view the external organizational conditions as minor driving forces for competence development, and they use a formal strategy for competence development (cf. Gill, Kock & Ellström, 2005).

With respect to the second research question, the following comments can be made. First, the results show that the character of the learning environment is related to the reported learning outcomes. Respondents in SMEs where the learning environment was classified as enabling, report significantly higher degrees of learning outcomes compared to respondents in SMEs classified as having a constraining learning environment. This is the case with respect to all five outcome variables. Another result is that the competence development strategy used by the SMEs, was also related to the reported learning outcomes. The results showed that respondents within SMEs using an integrated strategy report higher learning outcomes compared to SMEs using a formal strategy. Thus, the results demonstrate the importance of the nature of the learning environment of the SME as well as the significance of the strategy for competence development used by the SME. However, the relation between the use of different competence development strategies and the learning outcomes (three of five significant differences) appears to be weaker, compared to the relation between the character of the learning environment and the learning outcomes (five of five significant differences).

Our last research question concerned the relative importance of the learning environment and the use of different strategies for perceived learning outcomes. With respect to this question several comments could be made. First, aspects of the learning environment were found to be more important than the use of different strategies for competence development for explaining perceived learning outcomes. In metaphorical terms, this means that the soil (the learning environment) has a stronger explanatory value in relation to learning outcomes, than the methods for cultivating the soil (the strategy used). Second, there was however certain interactions between type of learning environment and the strategy used. Specifically, an enabling learning environment in combination with an integrated strategy was shown to result in the highest ratings of learning outcomes in all outcome variables. This can be compared

with the use of an integrated strategy in combination with a constraining learning environment. This combination resulted in the lowest ratings of learning outcomes in four out of five outcome variables. A reasonable interpretation of this finding is that higher learning outcomes presuppose a learning environment of an enabling character. Furthermore, instead of using an integrated strategy in a constraining learning environment, our results indicate that a more productive choice could be to use a formal strategy. However, our results also indicate that an even better choice, at least in a longer perspective, could be to develop the learning environment of the firm. Examples on measures that may support the development of an enabling learning environment is increased qualification requirements, the development of a leadership supportive to employees' learning at work, a higher exposition to customer demands and competitive pressures, etc.

The results presented in this paper can be further developed in several directions. We have hitherto been able to present results on learning outcomes on the level of the individual. An interesting question is whether we can expect to find similar results of learning outcomes on an organizational level? And if so, can we expect to find a similar pattern concerning the importance of the learning environment and the character of the strategies for competence development used by the SMEs?

Up till now we have been able to present some interesting findings concerning the character of the learning environment, the strategies for competence development and the learning outcomes in SMEs, based on empirical data from 14 small and medium-sized companies. An interesting question is whether it is likely to find similar results if we target a similar survey to a sample of large companies? Indeed, we know from previous research that SMEs differ from large companies concerning how they plan and accomplish competence development (Kitching & Blackburn, 2002), but it would be interesting to observe to what extent, and why there might be (or not be) differences between SMEs and large companies in this respect.

Yet another interesting issue concerns whether the reported learning outcomes are long lasting ("sustainable") over time. We know from psychological research that retention from learning is gradually declining over time, and a bulk of research has also explored questions concerning under what conditions "transfer of learning" can be expected. Turning back to the results presented, it would be interesting to explore whether the use of different strategies for competence development are important to achieve more long lasting learning outcomes, both on the individual and on the organizational level. And finally, as previously noted, we have not taken into consideration the importance of conditions and factors tied to the single individual. In further studies it would also be important to include factors tied to the individual: previous experiences from competence development, motivation to learn, etc.

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