Relations between Learning Environments, Competence Development Strategies, and Learning Outcomes in SMEs

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Competence Development in SMEs – Relations between the learning environment, strategies for competence development and learning outcomes

Abstract

Based on a distinction made between two types of competence development strategies (formal/integrated) and two types of learning environments (constraining/enabling), we are able to show that certain combinations of competence development strategies and learning environments seems to result in higher learning outcomes among employees in the studied SMEs. The relations between different learning environments, strategies for competence development and learning outcomes are further discussed.

Keywords: Small and Medium sized Enterprises, Human Resource Management and Development, learning and development, Human Resource Management and Development, work environment

INTRODUCTION

In a previous study on patterns of competence development in SMEs, we were able to demonstrate the importance of external and internal conditions as driving forces for competence development efforts in SMEs (Kock, Gill & Ellström, 2008). A distinction was made between two types of contextual conditions: 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. Firms evaluating the contextual conditions as weak driving forces for competence development more frequently used a formal strategy (focused on formal courses in or outside the workplace), while firms evaluating the contextual conditions as strong driving forces for competence development used an integrated competence development strategy (focused on formal courses in combination with changes in the work organization).

In this paper, these issues will be pursued a bit further. Specifically, there will be a focus on what strategies are being used, under what conditions, and with what outcomes. The purpose of the article is
to increase our understanding of the learning environment of the firm, the competence development strategies used, and the learning outcomes. The following three questions will be addressed:

1. How are different aspects of the learning environment related to the competence development strategies used by the SMEs; specifically, what type of strategy is used in what type of learning environment?

2. How are different competence development strategies and aspects of the learning environment related to perceived learning outcomes?

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

**Competence Development Strategies: Formal and Integrated Strategies**

The notion of competence development is used here as a general term for the various activities that can be used to affect the supply of competence in the internal labour market (in individual employees, groups of employees or the whole personnel group). As used here, it refers to a wide range of activities, including the education and training of employees, for instance by means of internal or external courses, but also changes in the work organization with the objective of furthering learning at work (e.g. job rotation, team organization, and systems for continuous improvement) (Ellström, 1997). Furthermore, different competence development activities can be described as planned, but attention should also be paid to unplanned or unintended functions that a certain activity may have. Consequently, while studying competence development in organizations, it is possible to use the degree of planning and organizing as a distinction between different activities. A well known distinction is between two broad categories of activities (Marsick & Watkins, 1990; Marsick, Volpe & Watkins, 1999):

- formal learning, that is planned and organized activities for workplace learning, mainly financed by the employer and taking place during working hours,
- informal learning in the daily work, that is through participation in development projects, staff meetings, job rotation, team-based work, etc.
This conventional distinction is, in some respects, parallel to the distinction between the two perspectives or metaphors of learning proposed by Sfard (1998), that is ‘learning as acquisition’ and ‘learning as participation’. In the former perspective, learning is viewed as a process with an observable outcome, often accompanied by a certification or a grade from a course or a structured programme under the guidance of others. In the latter perspective, learning is conceived of as a process in which learners improve their work performance by carrying out activities which involve interacting with people, tools, materials, etc., and that focuses on learning activities that occur naturally as a part of the work process (Felstead et al., 2005; Fenwick, 2006).

Now, based on these distinctions and previous empirical research, we propose a distinction between two competence development strategies. In line with Mintzberg (1994), the notion of a strategy, as used here, refers to observed patterns of practices with respect to competence development. In a previous study, we were able to empirically identify two different patterns of practice with respect to competence development. A formal competence strategy mainly based on employee courses in or outside the workplace and focused primarily on the individual employee, and an integrated competence development strategy characterized by a use of courses in combination with changes in the work organization, and a focus on the individual employee as well as on the development of the company/organization (Kock, Gill & Ellström, 2008). The use of an integrated strategy may increase the employees’ ability to perform the daily work as well as the usually unplanned opportunities of the employees to co-operate, share experiences, and reflect on their own work. While the former strategy or pattern of practices comes close to the ‘learning-as-acquisition’ metaphor, the latter strategy is more in line with the ‘learning-as-participation’ metaphor.

**Learning Environments: Enabling and/or Constraining**

As used here, the concept of learning environment refers to conditions in an organization that are likely to enable or constrain learning in and through work (Ellström, 1997, 2001, 2006; see also Billett, 2001; Fuller & Unwin, 2004). The learning environment of an organization is assumed to affect not only the degree of employee learning in certain aspects, but also the quality of learning (e.g. whether the learning is mainly reproductive and instrumental or developmental in character [Ellström,
2006]). When we talk, here, about two types of learning environments: enabling and constraining, we consider them as ideal typical constructions, which are idealized forms that constitute the two extremes of a continuum of learning environments. In practice, we assume that a certain learning environment may include conditions that enable learning as well as conditions that may constrain learning. Thus, in practice, many learning environments are presumably of a mixed type.

Ellström (2001, 2006) discusses various conditions in organizational settings that are important for learning, and depending on the degree to which these conditions characterize a certain organizational context, this context constitutes an enabling or constraining learning environment. Examples of such conditions are:

- the learning potential of the work tasks defined in terms of complexity, variety and control;
- opportunities for feedback, evaluation, and reflection on outcomes of work actions;
- the work organization (supportive of co-operation and learning);
- employee participation in handling problems and in development activities;
- learning resources, including time and management support for competence development.

An enabling learning environment would, in terms of these aspects, be characterized by work tasks with a high degree of learning potential; opportunities for feedback, evaluation, and reflection; learning resources, etc. In cases where these conditions are less favourable, we would consider these cases as instances of a constraining learning environment. Fuller and Unwin (2004, 2006) make a similar distinction between expansive and restrictive learning environments. A restrictive learning environment is characterized by less stimulating work tasks, barriers to learning new work tasks, a lack of organizational support, etc., while an expansive learning environment, supportive of individual and organizational learning, is defined, among other things, in terms of more stimulating work tasks, opportunities to learn new work tasks, and the manager’s recognition of learning.

In this paper, we will focus on the character of learning environments by exploring how different organizational conditions are perceived by the respondents in each of the companies included in the study. More specifically, we will focus on the following conditions: qualification requirements, potentials for learning at work, management support for learning, and teamwork. On the basis of how
the different conditions were perceived, two broad categories of learning environments were defined: enabling and constraining. These two categories were used as a basis for a classification of the character of the learning environment in the fourteen SMEs included in this study.

**Learning Outcomes**

Learning outcomes could, in general terms, be defined as change at an individual, group, or organizational level as a result of participation in some form of training or competence development programme in an organization. In this study, we have focused on changes at an individual level. The changes may apply to knowledge, skills, values, behaviour, or some other aspect of human competence (Ellström, 1997). More specifically, we will use the concept of learning outcome to refer to how individual participants in a competence development programme perceive the outcomes of the programme in relation to changes in their professional competence, their overall view of the business, their ability to carry out new work tasks, their motivation for further learning, and their self-confidence.

**Model of Analysis**

The focus of this article concerns relations between the learning environment of the firm, the competence development strategies used, and the learning outcomes. These relations are viewed as complex and involving several factors and conditions. In Figure 1, we propose a model of analysis that will be used as a guide for analyzing data.

**Figure 1: Model of Analysis**

As shown in Figure 1, the learning outcomes from competence development are assumed to be dependent on the character of the firm’s learning environment, the competence development strategy used by the firm, and the interaction between the firms’s learning environment and the competence development strategies used. It should be noted that the above model is not complete as factors and conditions linked to the individual, such as motivation to learn (Colquitt, Le Pine & Noe, 2000) and previous experience of competence development (cf. Hodkinson & Hodkinson, 2006), and several contextual factors are not taken into consideration, for example the labour market conditions and the rate of technological development in the sector (Ellström & Kock, 2008).
METHODS

This study comprises data from a research project with the overall aim of studying competence development activities in SMEs. The study consisted of fourteen SMEs that all received support from the European Social Fund, more specifically, the Objective 3 Programme. According to the legislative framework, the grants from the Objective 3 Programme should target the competence development of employees and/or organizational development in SMEs, at both private and public workplaces. The collection of data in this study is based on a survey, qualitative interviews with management and employees, and an analysis of documents. The results presented in the paper are, to a large extent, based on the survey.

The selected SMEs (n=14) had completed their planned competence development activities within a period of 3–6 months before they received the questionnaire. We received a total of 151 responses, with a response rate between 57 and 100 per cent per SME regarding employees directly involved in the local competence development projects. The selected companies varied in size, from ten to sixty employees (Table 1).

Table 1: Number of Firms and Respondents in Relation to Selection Criteria

The questionnaire was designed to collect data concerning several conditions in the firm, with a focus on the areas in the above-presented model: the learning environment of the firm, the competence development strategies, and the learning outcomes from competence development.

In order to explore the learning environment, four groups of variables were measured: qualification requirements, the opportunity to learn in the daily work, management support, and teamwork. To be able to characterize the learning environment of each firm, an index of the learning environment was constructed based on five variables: qualification requirements (five items), opportunities to learn in the daily work (one item), management support (one item), and teamwork (one item).

The categorization of two different competence development strategies was presented in an earlier paper (Kock, Gill & Ellström, 2008) and a distinction was made between two types of competence development strategy: a formal strategy and an integrated strategy. The learning outcomes
at the individual level were measured in terms of seven variables: (1) professional competence; (2) ability to carry out new work tasks; (3) interest in more developmental work tasks; (4) the overall view of the business; (5) useable knowledge outside the workplace; (6) motivation for further learning; and (7) self-confidence.

The survey questions regarding aspects of the learning environment and the learning outcomes were all measured by Likert-type scales. In a first step, all variables were normalized and the composite measurements were transformed into $z$-scores. By using the mean as a divider, the learning environment was categorized into two groups: an enabling learning environment group and a constraining learning environment group. The companies’ use of certain competence development strategies was categorized into two groups: a formal learning strategy and an integrated strategy (cf. Kock, Gill & Ellström, 2008). Independent-samples t-tests were used to answer the first research question and in order to answer questions two and three a 2 x 2 fixed-effects ANOVA model was used.

**RESULTS**

In the text below, the results will be presented in relation to the three research questions set out above. For further information concerning the questionnaire and the variables included in the data collection, see the Appendix.

**Research Question 1**

The first question concerns the relations between different aspects of the learning environment and the competence development strategies used by the firm. In order to analyze these relationships four groups of variables were used: qualification requirements, opportunities for learning in and through the daily work, management support, and teamwork (see Table 2 below). Independent-samples $t$-tests were used to identify significant differences between the two strategies.

**Table 2: Relations between aspects of the learning environment and the use of different competence development strategies**

As shown in Table 2, the mean values concerning aspects of the learning environment are generally higher among firms using an integrated competence development strategy, and the results indicate that
there are six significant differences between the two strategies. The significant differences shown in Table 2 concern three groups of variables: qualification requirements, management support, and teamwork. Returning to the previously made distinction between a constraining learning environment and an enabling learning environment, the SMEs using an integrated competence development strategy appear to have a more enabling learning environment compared to the SMEs using a formal strategy. Thus, the results indicate that the character of the learning environment is related to the use of different competence development strategies.

**Research Questions 2 and 3**

In order to analyze the second and third research question, a 2 x 2 fixed-effects ANOVA model was used analyzing the main effects of the two independent variables, the learning environment (LE) and the competence development strategies (CDSs), and the interaction effects between the LE and the CDSs. An analysis of different combinations of competence development strategies (formal/integrated) and different types of learning environments (constraining/enabling) was also carried out.

**Table 3: Mean values, standard deviations, and correlations for learning outcomes**

The means, standard deviations, and intercorrelations among the dependent variables (learning outcomes) are presented in Table 3. The intercorrelations between the dependent variables were found to be significant (p < .01) and they range from .39 to .70.

In Table 4 (below), the results from the two-way ANOVA analysis are presented. The computation is based on the index variable measuring the learning outcomes.

**Table 4: Results of the two-way ANOVA analysis for the CDSs and the LE**

The results in Table 4 show that there is a significant main effect of the learning environment in relation to learning outcomes (p=.001), but no significant main effect regarding competence development strategies in relation to learning outcomes. These results underline the importance of the character of the learning environment in relation to learning outcomes, and that firms characterized as having a more enabling learning environment reach significant higher learning outcomes compared to
firms with a constraining learning environment. From the above given operational definition of an enabling learning environment, this finding supports that different qualification requirements, opportunities to learn in the daily work, management support, and teamwork are important preconditions in order to reach higher learning outcomes among the firms’ employees.

It is also apparent from the results presented in Table 4 that there is an interaction effect between the character of the learning environment and the strategies for competence development (p=.003). From this result it seems reasonable to presume that different combinations of competence development strategies (formal/integrated) and different types of learning environment (constraining/enabling) result in different learning outcomes. In table 5 (below) we compare the mean values of the learning outcomes between four combinations of learning environments and competence development strategies.

Table 5. Analysis of four combinations of learning environment and competence development strategies in relation to learning outcomes.

If we compare the mean values of the learning outcomes between the four combinations in relation to the learning outcomes of the whole sample, the highest mean value is generated in an enabling learning environment using an integrated strategy (E/I), M=2.65, and the lowest in a constraining learning environment using an integrated strategy (C/I), M=1.90. The two other combinations, the enabling learning environment/formal strategy (E/F), and the constraining learning environment/formal strategy (C/F), result in mean values between the two former: M=2.28 (E/F), respectively M=2.23 (C/F). The further analysis of four possible combinations of learning environment and competence development strategies demonstrates additional differences.

From Table 5 it is clear that a combination comprising an enabling learning environment and an integrated strategy for competence development result in significant higher learning outcomes in relation to the three other combinations. Thus, concerning our final research question, a preliminary answer can now be given. Firstly, the character of the learning environment seems to have a major importance to the learning outcomes. This is supported by the two-way ANOVA analysis (see Table
4), and by the comparisons of four different combinations of learning environments and competence development strategies (see Table 5). Secondly, the results also show that the use of different strategies for competence development is important. When an integrated strategy is used in an enabling learning environment the learning outcomes are significant higher.

**CONCLUSIONS**

Considering the data presented in the preceding sections, at least the following conclusions may be drawn. First, the results indicate that the competence development strategy used by the firms is related to the character of their learning environment: the SMEs using an integrated competence development strategy were characterized by a more enabling learning environment compared to the SMEs using a formal strategy. One possible interpretation of this result is that an enabling learning environment seems to “open up” for a use of an integrated strategy. It seems as if there is a kind of internal relation between the existence of an enabling learning environment and the use of an integrated strategy for competence development: the one presuppose the other. The successful implementation and use of an integrated strategy for competence development depend on the existence of an enabling learning environment. Conversely, the learning potential of an enabling learning environment is most fully realized only if the firm uses an integrated strategy for competence development. From this perspective, it seems important to develop the notion of a strategy for competence development to include also aspects of what we here define as a learning environment (or conversely, a notion of learning environment that also includes a strategy for competence development). In line with this suggestion, an integrated strategy for competence development would emphasize also aspects of an enabling learning environment such as higher qualification requirements, opportunities to learn in the daily work, management support and teamwork (or an enabling learning environment would include elements of an integrated strategy).

Second, the learning outcomes reported from participation in competence development activities appear to be related to the character of the firm’s learning environment as well as the competence development strategy used. With respect to the relations between the type of learning environment and learning outcomes, the results indicate that firms characterized by an enabling learning environment
generally report significantly higher levels of learning outcomes compared to those characterized by a constraining learning environment. The relations between the competence development strategy used by the firm and the reported learning outcomes appear to be weaker than the relations between the learning environment and the learning outcomes. Although the use of an integrated strategy compared to a formal strategy is generally associated with higher mean values in terms of learning outcomes, this difference reaches statistical significance only for one of the learning-outcome variables, that is for the variable ‘enhanced holistic view of the business’.

Third, concerning interactions between the type of learning environment and the competence development strategies used by the firm, we were able to show: (a) that the character of the learning environment (constraining or enabling) makes little, if any, difference in terms of learning outcomes for firms using a formal competence development strategy; and (b) that this is clearly in contrast to firms using an integrated strategy, where the character of the learning environment makes a considerable difference in terms of reported learning outcomes. The use of an integrated strategy in an enabling learning environment is the most successful combination in terms of learning outcomes, while the use of an integrated strategy in a constraining learning environment appears to be the least successful combination. Thus, the character of the learning environment appears to make a difference in terms of reported learning outcomes, but this statement is valid primarily for the firms using an integrated strategy. The learning outcomes associated with the use of a formal strategy are largely unaffected by the character of the learning environment. A reasonable conclusion from this analysis is that an enabling learning environment is a necessary, but not a sufficient condition for achieving higher levels of learning outcomes. In order to achieve higher levels of learning across the different measures used in this study, an enabling learning environment needs to be combined with an integrated competence development strategy.

These findings strongly support the idea of the workplace as an important learning environment. However, given the results and conclusions presented above, this general idea needs to be qualified in several respects. In line with previous research (Svensson, Ellström & Åberg, 2004; for a recent review, see Ellström & Kock, 2008), this study indicates the importance of using competence
development strategies that are based on an integration of formal and informal learning, that is what we have called integrated competence development strategies. In relation to the distinction between ‘learning as acquisition’ versus ‘learning as participation’ (Felstead et al., 2005; Sfard, 1998) cited above, a clear implication of this study is the need to also try to integrate these two perspectives. The use of an integrated strategy may be associated with higher levels of learning outcomes compared to a formal competence development strategy, this should not always be expected. On the contrary, our results indicate that the learning outcomes associated with an integrated strategy depend on the character of the learning environment. An integrated competence development strategy could be expected to result in higher levels of learning outcomes only if it is carried out in an enabling learning environment. If the learning environment is characterized as constraining rather than enabling, an integrated strategy is likely to be less successful.

However, the above model is not complete; several other important aspects are not taken into consideration. First, factors and conditions linked to the individual, such as motivation to learn (Colquitt, Le Pine & Noe, 2000) and previous experience of competence development (cf. Hodkinson & Hodkinson, 2006; Jorgensen & Warring, 2002), are not included in the model. Second, a number of contextual factors are not taken into consideration, for example labour market conditions and the rate of technological development in the sector (Ellström & Kock, 2008). The results presented in this paper can be further developed in several directions. So far, it has been possible to present learning outcomes at the individual level. Is it also possible to identify learning outcomes at an organizational level? And if so, can we expect to find a similar pattern concerning the character of the learning environment and the importance of the competence development strategies used by the SMEs? Other interesting questions concern whether it is likely that we would find similar results in 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 (Sadler-Smith & Lean, 2004; 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.
Appendix

Table 1

- Variables 1–5 are based on the responses given to the question: ‘To what degree have the demands on your competence been affected in recent years concerning...’. The table provides the mean value of the responses given, with 3 = ‘The demands have increased’, 2 = ‘The demands are unchanged’, 1 = ‘The demands have decreased’.

- 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 = ‘Neither large nor limited’, 2 = ‘Fairly limited’, 1 = ‘Very limited’.

- Variable 7 is based on the responses given to the question: ‘To what degree does the management support increasing your competence?’ The table provides the mean value of the responses given, with 5 = ‘To a very high degree’, 4 = ‘To a fairly high degree’, 3 = ‘To neither a high nor low degree’, 2 = ‘To a fairly low degree’, 1 = ‘To a very low degree’.

- Variables 8 and 9 are based on the responses given to the question: ‘To what degree are the 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’.

Table 2

- The table is based on the responses given to the statement: ‘The competence development programme has resulted in...’.
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’.

Table 3

- The table is based on the responses given to the statement: ‘The competence development programme has resulted in...’.
- 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’.

Acknowledgements

The research for this paper was funded by VINNOVA (The Swedish Governmental Agency for Innovation Systems) and the Swedish ESF Council. We would also like to acknowledge the support from three regional offices of the Swedish ESF Council: Eskilstuna, Jönköping, and Linköping.

References


Table 1. Number of Firms and Respondents in Relation to Selection Criteria

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Figure 1: Model of analysis

Learning Environment of the Firm: Enabling and/or Constraining

Competence Development Strategies Used by the Firm: Formal or Integrated

Learning Outcomes as Perceived by the Participants

Table 2: Relations between aspects of the learning environment and the use of different competence development strategies

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<th>Integrated strategy</th>
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<td>Qualification requirements with respect to:</td>
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<td>Opportunities to learn in daily work (6)</td>
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Use of teamwork (8)  

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<td>1. Increased professional competence</td>
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<td>.83</td>
<td>.70**</td>
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<td>3. Interest in more developmental work tasks</td>
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<td>.47**</td>
<td>.58**</td>
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<td>.89</td>
<td>.39**</td>
<td>.53**</td>
<td>.57**</td>
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<td>.75</td>
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<td>.51**</td>
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<td>6. Increased motivation for learning</td>
<td>2.64</td>
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<td>.53**</td>
<td>.51**</td>
<td>.62**</td>
<td>.51**</td>
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<td>7. Increased self-confidence</td>
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<td>.83</td>
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<td>.46**</td>
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*p < .05, **p < .01

**P < .01

Table 4: Results of the two-way ANOVA analysis for competence development strategy (CDS) and learning environment (LE)

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<td>Learning Environment (LE)</td>
<td>4.35</td>
<td>1</td>
<td>4.35</td>
<td>11.65</td>
<td>.001</td>
</tr>
<tr>
<td>CDS * LE</td>
<td>3.53</td>
<td>1</td>
<td>3.53</td>
<td>9.44</td>
<td>.003</td>
</tr>
<tr>
<td>Error</td>
<td>51.57</td>
<td>138</td>
<td>.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>868.51</td>
<td>142</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>62.66</td>
<td>141</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
a. R Squared = .177 (Adjusted R Squared = .159)

Table 5. Analysis of four combinations of learning environment and competence development strategies in relation to learning outcomes.

<table>
<thead>
<tr>
<th>Combinations</th>
<th>Learning outcomes</th>
<th>T-tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean values</td>
<td>SD</td>
</tr>
<tr>
<td>Enabling learning environment/ integrated strategy (E/I)</td>
<td>2.65 .64</td>
<td>E/I – E/F,   t = 2.32*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E/I – C/I,  t = 5.17**</td>
</tr>
<tr>
<td>Enabling learning environment/ formal strategy (E/F)</td>
<td>2.28 .40</td>
<td>E/I – C/F,  t = 2.96**</td>
</tr>
<tr>
<td>Constraining learning environment/ integrated strategy (C/I)</td>
<td>1.90 .58</td>
<td>E/F – C/I,  t = 2.57*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E/F – C/F,  t = .23</td>
</tr>
<tr>
<td>Constraining learning environment/ formal strategy (C/F)</td>
<td>2.24 .67</td>
<td>C/I – C/F, t = -2.14*</td>
</tr>
</tbody>
</table>

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