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KNOWLEDGE TRANSFER AND DELIVERY FORMS FOR CONTINUOUS EDUCATION IN SMALL AND MEDIUM SIZED ENTERPRISES

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Abstract: This paper brings the preliminary results of interviews with Scandinavian managers and engineers asking questions regarding their previous experiences and knowledge on diverse continuous education methods and further encourages them to gaze into the crystal ball to identify requests and expectations to future methods of continuous education. The interviews have been done within a project titled: *Processer til håndtering af skræddersyede efteruddannelsesforløb (PHASE)*, financed by the Nordplus Programme. The partners are: Aalborg Universitet from Denmark, Reykjavik University from Iceland and KTH Royal Institute of Technology from Sweden.

Keywords: Continuing Education (CE), Knowledge transfer, Tailor made education, Production engineering, Small and Medium Sized Enterprise (SME).

1. INTRODUCTION

In a world of continuous developments the right competence is an important tool to be able to compete for companies on the global market. How can the education providers meet the need for knowledge and updates and in which forms should the education be delivered? In a Nordplus project, *Processer til håndtering af skræddersyede efteruddannelsesforløb (PHASE)*, with partners from Denmark, Iceland and Sweden these questions are addressed and focus has been on how education can be tailor made to meet the needs from companies especially SME's. The ultimate goal is to find an applicable methodology that can handle these matters.

The partners are: Aalborg Universitet from Denmark, Reykjavik University from Iceland and KTH Royal Institute of Technology from Sweden. The Nordplus Programme offers financial support to a variety of educational cooperation between partners in the area of lifelong learning from the eight participating countries in the Baltic and Nordic regions.

The investigation will highlight some of the future challenges for Continuing Education (CE) providers within the Nordic region. The result will be the base for further development in order to facilitate more efficient knowledge transfer in lifelong learning.

2. CONTINUING EDUCATION

Knowledge is as perishables, it often has a best before date, so it is necessary to do continues updates in order to be aware of the latest findings. The universities, institutes and other education providers play an important role as knowledge resource in this context. The problem for the company and the employee is often first to define the knowledge needs in terms of different learning deliverables. When and how the competence and updates should be delivered to the stakeholders, the employees at the enterprises are also issues that need to be addressed. Depending on the field or topic of interest and the amount of knowledge that is requested the delivery form can vary very much. Each learning situation is unique and the competence request has to be carefully analysed in order to achieve maximum knowledge transfer and satisfaction for the learner. The tailor made link between content and way of delivery is essential.

During the last decades numerous attempts have been made to develop new methods for Continuing Education (CE) in order to meet today's fast changing world. When glancing through CE promotions words as 'tailor-made courses', 'networking', 'costume-made courses', 'knowledge transfer' and 'distance learning' frequently come up in relation to CE and especially the word 'tailor-made' seems to be the centre of attention and the solution to all problems in relation to meeting the needs for new knowledge within companies. However, the field of CE is broad and the boundaries are not well defined, CE is often used in different contexts with different meaning and there is a wide variation in the mix of elements it includes and the ways they are thought e.g. many CE programs make heavy use of distance learning. The broad field range from traditional crash courses with duration of 1, 2 or 3 days and the content predefined by the supplier, through courses which are costume-made with learning objectives and content defined by the client company, to problem based continuing education or research collaborations between e.g. university and company.

Concepts of tailor-made approaches have been described and entitled (WBL, FWBL e.g.) by various researchers during the last decades (Boud, 2001; Fink et al. 2006; Nørgaard et al. 2004).

WBL: Worked Based Learning can be either an individual learning programme or a thematic programme for a group of engineers where competences/knowledge based skills are developed and evidenced through delivery of the work set by the organisation. The learning objectives are the subject of negotiation between the University, the company and the learner.

FWBL: Facilitated Work Based Learning is a learning programme designed for individuals or groups of engineers in a company, a learning programme that will be considered as continuing professional development. Here the learning objectives will not be defined to meet academic goals but defined to match the strategy for competence development in the company. The learning will be defined based on a combination of individual and company needs.

However, a common definition is 'A course' for individuals/groups of employees in a given company who in co-operation with a university establish a training programme where the employees at their work continuously go through a well-defined and tailor-made learning process. The training programme is taught by teachers from the university and if possible, based on relevant development projects in the company' (Nørgaard et al. 2004, p. 2). Often a tailor-made course is characterised as a partnership between three partners - the company, the employee and the CE supplier. The courses all have a distinctive mark of being individual since learning objectives are identified and specified to match the needs of the company and the meet preferences of the employee.

Various CE suppliers have developed and implemented different CE models during the last decades and some research have been conducted evaluating these different models (Ellström et al. 2007). The question that arises is how do the companies and their employees receive these different approaches?

3. INVESTIGATION OF CE ACTIVITIES

In order to find out the way enterprises handle matters related to continuing education 26 companies were interviewed. The interviews were performed in Denmark, on Iceland and in Sweden and the target group has been primarily small and medium sized enterprises (SME's). The companies involved in the study were selected on one criteria - that the company should have some relation to the engineering line of business and within that group the enterprises were randomly selected (Flyvbjerg, 2006). Both staff from the management level and the employee level was interviewed in the study.

Denmark is known for a small, but powerful manufacturing industry. The manufacturing industry has a strong link to wind power and producing components for the wind turbines is a big business. Apart from this Denmark also produce other machined parts and items that are machined such as sporting goods, ceramic materials and toys. These industries are all very important for the wealth of the country.

The enterprises that were interviewed in Denmark are all SME's with an own production unit and they are all located geographically in the Aalborg region.

Sweden has a long history of engineering innovations that has been turned into profitable business. Many of the companies that exist today are a result of these initial innovations that has been turned into new products and concepts. In order to succeed with this it is essential to have staff with relevant competence. Sweden is a small country and today the individual's competence has become even more important in order to compete on the global market. Competence development is therefore a natural thing in Swedish industry and the attitude is generally positive for taking part in CE activities. In the Swedish manufacturing sector is the total hours of total working time spent on continuous education for women 1.5% and for men 0.9% . If you look on the overall picture for all industries , services and the public sector the corresponding numbers are 1.7% for women and 2.6% for men (SCB, 2014). There is a need to increase the education activities in the manufacturing sector in order to cope with the very intense technical development.

The enterprises that were selected to be interviewed in Sweden are all engineering companies with production units. The companies are either SME's or smaller units within a larger group.

In Iceland the key areas which are associated with manufacturing are processing of fish, aluminium production, agriculture and energy.

The companies that were selected to be interviewed in Iceland are of different types for instance public companies and consulting engineering firms. The education level in the interviewed companies is overall high.

The 26 interviews were all conducted based on a common structured interview guide developed within the PHASE project, which was structured to cover three overall themes through specific questions. The first theme aimed at gathering factual background variables on the company along with past and present CE activities accomplish within the company. The second theme focused on the strategic choices behind the company's CE activities. And the last the third theme draw the attention to future CE activities and the respondent's wishes and expectations regarding how CE courses in the future should be organized and taught. The overall concept with the interview guide is to create a base for the analysis of SMEs needs and how to get access to competence development services.

In short the themes are:

- Factual background variables and past/present CE activities
- Strategic choices in connection to CE activities
- Future CE activities and wishes

The questionnaire has been used as a support during the interviews and a check-list for the interviewer. The actual interviews has however been performed as an open discussion between the respondent and the employer/employee. The respondent has therefore had no access to the questionnaire template. The duration of each interview was between 30-45 minutes.

3.1. Past and present CE

The companies that participated in the interviews were small and medium-sized enterprises (SME) with less than 250 employees and large companies with more than 250 employees (EU, 2003). Their past and present experiences with CE activities were numerous but very diverse ranging from narrow subject specific crash courses through diploma and master courses to communities and network. As one of the respondents said 'marketing materials for CE activities come through the door constantly – UCN (University College Nordjylland) is very active, trade union is very active – there is an endless flow which piles up'. Supplier courses of different kinds are common examples of CE activities that take place on the shop floor. Another incitement for an education activity is new trends like sustainable production, lean production and safety regulations. This pile of CE offers might be difficult to navigate through for some of the companies since the overall picture is that a minority of the interviewed companies have an explicit clear CE-policy. In the bigger companies the administration of offers can often be handled in a more systematic way since the HR Department usually coordinate these matters. Recommendations through personal contacts or networks are other ways of getting CE offers.

The larger enterprises plan and budget their CE activities in advance. Common for the SME's is that they do not have a specified budget for CE. In both cases there is however flexibility, so if a sudden need for a CE activity arises this matter can usually be solved. This is a sign for less importance of the continuous education matters.

3.2. Strategic choices in connection to CE activities

The second theme focused on the strategic choices behind company's CE activities e.g. who takes initiatives to participate in a course. The answers are not unambiguous when it comes to initiative to CE activities. One of the respondents hesitantly said 'it both can be the employee or it can be me - who is doing something! Education is considered to be the employee's responsibility. This was phrased by one of the respondents 'The desire of CE is formally explored in staff interviews every two years. In between it is the employee's responsibility to establish preferences for CE to immediate superior'. If something comes up during the yearly staff development interview – then it is typically there it is born'. This answer fairly well covers the diversity in the responses. There is no clear answer to whom takes the initiative even though the employees from SME's tend to have more influence on the decision. Whereas the large companies have HR-department and some even have a web-based knowledge platform where the employee can select among recommended CE activities. Nevertheless several of the companies refer to staff development interview as a mean to consider and decide on CE activities.

The decision to grant an employee the opportunity to participate in a specific CE activity is primarily based on the content of the course and the benefits in terms of knowledge for the employee - 'we send off men individually - according to what they themselves think they need'. The price for a CE activity is not a crucial factor but it is of some importance in the selection process between identical courses. A manager from a SME company said 'something we also have used is supplier-courser – over time they probably are the once we have used the most' and earlier in the interview when asking about the price and if it had influences on the selection process, the same manager mentioned that 'supplier-courses are normally free of charge'. So even though price is not the crucial basis for decision it somehow might have a hidden impact. Similar findings as described above has been reported by Hyland and Matlay (Hyland et al. 1997).

Most of the companies prefer that the CE activity takes place in the premises of their own company and they only send employees to external courses if it is necessary and no other option is available. Others find external courses acceptable as long as they take place in the local area and again only a few prefer external courses 'I would prefer that it take place outside the company. It gives much more peace and concentration. Because when we are in the company someone always comes and open the door - Peter could you please ...? Gladly, outside the company'. The fact that most of the respondents prefer an in-house course perhaps also indicates that CE courses has nothing to do with staff care and recognition as in earlier times with courses located in skiing resorts, they might have had a hint of acknowledgment. Now the overall demand is that the content is applicable in practise. Academic credits and accredited courses have been ranked as important by only a few of the companies. Most believes that the least important thing is that the course will lead to a degree or is accredited. However, for the individual employee academic credits and accredited courses can have a value depending on what time in life the person is regarding his career.

When asking about the importance of the choices of CE activities in relation to the company strategy, the answers are divided as to the size of the company. However, more than 50% of the respondents think that it is very important that the choice of a CE activity is in alignment with the vision and strategy of the company. On the other hand still some responds think that it is not so important, because they have no particular strategy for the company regarding CE, therefore as long as the course is useful to the employee and the work he is doing, then the company is satisfied. Even though the answers moving in different directions a clear relation towards the size of the companies appears whereas the large companies all have strategies the SME's more seldom act strategic in relation to CE activities. Two respondents from SME's said 'until now strategy has not been important since they [read the courses] have all been professional related' and the other one said 'Everyone here are wearing working glove - we do not have the time for someone to sit down and think strategic'. As it appears some of the SME's do not even have a company strategy, less do they have a strategy for competence development of their staff!

3.3. Future CE activities and wishes

During the interviews it was in general difficult to keep the conversation all about the models for CE and not consider content or subject and especially when the respondents were asked to look into the future and phrase their wishes and expectation regarding how CE in the future should be organized and taught. Most of them were not able to reflect beyond the well-known and traditional model in their wishes and expectations. Only a few were by themselves able to articulate 'CE is considered as an important matter within the company and if it is

tailor-made it is even better' and 'we are not interested in fundamental research, problem based projects are much more interesting for us'. When it is emphasize that it was - by themselves - is because finishing the interviews all respondents were shortly introduced to principles of tailor-made courses and afterwards asked about their views on a tailor-made approach to CE. The tailor-made approach was very well received most saw great potential in the concept and especially the connection to development and problem solving projects in the company but also the idea of having an academic staff member as teacher in the company one said 'very relevant! It sounds like a great idea – just like having a professional specialist'. Still a few did not support the concept 'we are ok buying short courses [read traditional courses] since we have so many traveling days which makes it difficult to coordinate'.

Besides the tailor-made concept other requests and expectations were mentioned as important to the companies. For instance the importance of taking care of the competence that already exists in the enterprise was highlighted. One of the interviewed said that 'Knowledge should be transmitted between generations' in order to secure that no knowledge or skills are lost when a person in the company retired. In an SME there are often employees with key competence that a company cannot do without. On the other hand one way of solving a lack of competence in a certain area can be to recruit a new employee that is a specialist in the field.

The knowledge in the courses should be useful in practice and there is a request for flexibility both in delivery (time, duration and interval) and content. The benefits of networks have also been emphasized. Extended network and closer cooperation with education providers such as Institutes and Universities are two issues that have been highlighted as important for the future.

4. DISCUSSION AND CONCLUSION

This study has focused on investigating knowledge transfer and delivery forms between education providers and enterprises. The investigation has been performed in Denmark, Iceland and Sweden and especially SME's has been the target group. The three countries have that in common that they have a strong manufacturing industry although the main national industrial focus areas are different.

In order to compete and survive on the global market right competence is an important tool. Just in time delivery of the requested competence is often a key factor for success. In order to create this it is essential to create a mutual trust through an open dialog between education providers and the education receivers. This will facilitate the cooperation, strengthen the interface and create a common understanding of the enterprises current and future demand. Already established networks play an important role in this context and can help bridge the gap between the academy and industry.

The interviews show that the incitement for starting a continuous education activity is more focused on short term benefits for the company than long term building of competence within the staff. Often education activities are initiated by investment in new equipment and introduction of new methods and processes at the company. Just in time delivery concerning CE activities is preferred and the companies are in favour of the tailor made concepts. Examples of courses that can be just in time delivered are supplier courses whereas staff competence development is considered more long term and with lower priority. In fact this is not true because higher staff competence courses also mean higher efficiency with time savings among the results. The awareness that an investment in education can be very profitable on short term for a company is not commonly accepted. One reason for this can be that the education updates are not measured in terms of return on investment. It is the task for the education provider to make these facts obvious and a base for action.

Our findings can be summarised in the following points.

- Written official plans for CE rarely exist in SMEs
- SMEs have unwritten plans for actions in CE
- Local networks play an important role for SME's in evaluating and selecting CE courses.
- Priority in CE activities lies in introduction of new processes, methods etc
- Competence development of staff has a lower priority
- The acceptance of ROI in CE is low in SMEs
- CE providers especially universities should supply evidence for high ROI for CE activities
- CE providers should show how that can be done effectively at SMEs conditions
- The WBL concept is considered to have a high potential by the interviewed companies.
- The duration of the CE activity has to be adjusted and aligned with the content. Consequently the duration is closely connected to the extent and number of parts included in the activity.

- More experience transfer between employees especially across generation boarders, extended network and closer cooperation with education providers such as Institutes and Universities are two issues that have been highlighted as important for the future.

SMEs can be seen as learning organisations in an informal way. This has also been concluded by Gibb (Gibb, 1997). The challenge is to enhance this learning process through delivery of different services. Universities and other Education providers have resources and time for deeper analysis that can support SMEs in their activities and business. The authors are convinced that the Universities and other Education Providers can play an important and more active role in the SMEs learning process.

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