ORGANISATIONAL PROBLEM BASED LEARNING AND SOCIAL COMMUNITIES FOR SMES

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Abstract

This paper highlights reasons for SMEs low uptake of training and argues that current offerings are not suitable for their needs. It highlights the need to leverage the benefits of work based learning through the use of technology. Social media and web 2.0 has significantly changed the way people learn and access knowledge. The body of knowledge is exponentially increasing every day. It is difficult for individuals and companies to keep abreast of new developments. A new approach to learning is required for companies, focusing on their immediate needs while building competitive advantage. Problem based learning (PBL) is a highly contextualised approach to learning and can use staff development to target real problems the companies face. PBL requires collaboration from mentors and peers, thus there is an element of social learning that takes place. The paper examines the use of problem based learning and social learning and communities in SMEs. It highlights the fact that this approach will allow SMEs acquire additional expertise and skills outside of their organisation while at the same time developing staff. To date there has been little research conducted into organisational problem based learning. PBL is widely used in academic courses however not in companies. Mentoring and social learning are widely used in SMEs however it is often unstructured and the return of such is unclear compared to academic contexts. This paper suggests that further research needs to be conducted in using Problem based learning. It examines the use of PBL in an organisational context and explores the role of ICT based mentoring through social communities in supporting such.

Keywords: Informal learning, Problem based learning, Social learning, Mentoring, SMEs, COPs.

Introduction

Even in today's turbulent economic climate SMEs remain vital to the European economy still accounting for 98 % of companies and 67 % employment (Wymenga et al., 2012). Bearing in mind that 50 % of SMEs fail in the first five years (de Kok et al., 2011), it is important for Europe to ensure the survival of these companies and encourage growth. Statistics show that the probability of new entrants surviving is quite low and the chances of survival reduce the smaller the firm (European Commission, 2003b). The European Observatory report: SMEs in Europe 2003 emphasised that in times of an economic downturn, smaller companies maintain more employees than large companies. "During recessionary periods, SMEs are able to mitigate the job losses in LSEs." (European Commission, 2003b). Research has shown that innovative companies have weathered the economic storm more favourably. (de Kok et al., 2011). SMEs are geared favourably towards innovation in that they are able to change direction relatively quickly as they are relatively flexible in nature. However they often lack the knowledge and expertise to assist them to fully make the transition. For innovation to occur the creation of new knowledge and the development of skills is key. Furthermore research has illustrated a positive relationship between training and firm productivity (Blundell et al., 1999; Konrad & Mangle, 2000). Training can also facilitate the ability of employees to adapt to change. (Admiraal & Lockhorst, 2009)

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Many observers from the research community, business and government organisations have stressed the importance of employee training in improved productivity and thus competitive advantage.

> *"Competitive advantage grows fundamentally out of value a firm is able to create for its buyers that exceeds the firm's cost of creating it." (Porter, 1985, p.3)*

Training can assist organisations to establish and sustain a competitive advantage by increasing productivity, quality and financial results. Management literature suggests that competitive advantage built on knowledge and skills is less visible to competitors and thus more difficult to imitate, therefore providing a base for a more robust advantage. (European Commission, 2003a)

"There is a widespread consensus among commentators and politicians alike that training should be encouraged since it has a desirable effect on productivity and improves national economic performance". (Ashton & Felstead, 1995). Many studies have highlighted the fact that companies investing a higher percentage in training obtain a higher level of productivity (Holzer et al., 1993; Barron et al., 1999; Conti, 2004, Konrad & Mangell, 2000). Productivity relates to the efficient use of inputs in producing prescribed outputs of goods or services, or the ratio of inputs to outputs, the most common input measure being labour (Stainer, 1997; Filiatrault et al., 1996). Black and Lynch conducted a large-scale study of the effect of training on manufacturing and non-manufacturing firms in 1996. They found that a 10 percent increase in education results in a 4.9 percent rise in productivity in the manufacturing industry and a 5.9 percent increase in productivity in the non-manufacturing industry. They also suggested that in some cases training may reduce productivity in the short term, but significantly increase it in the long term, similar to the effect investment capital equipment has.

However in many cases SMEs are slow to undertake new forms of training despite the fact that some of them been proven to maintain employee productivity improving a firm's competitive advantage (Ashton & Felstead, 1995). Stone 2010 reported i.e. that on average 36 % of SMEs do not have any formal training activities. Amongst the main reasons for this are (European Commission, 2003a; Nottingham Trent University, 2002; Storey & Westhead, 1997; Hankinson, 1994):

- Lack of Time.
- Lack of Funding (Costs).
- Lack of Planning.
- Lack of Relevant Courses
- Lack of manager interests for changes.

To date many efforts to encourage SMEs to adopt training have failed miserably. E-learning has tried to address issues of time and cost, by allowing employees to access learning resources remotely. However technology has now significantly changed the way people access information, the most up to date information is dispersed and embedded in networks, websites and social media sites. In addition many SMEs do not have a dedicated human resources person or even an employee that can be charged with the responsibility of searching for relevant learning resource.

SMEs need a targeted approach to training that can be done on the job and provide an immediate return for the company. It must be possible to leverage off of other expertise in and outside the company to ensure the success of the training. Problem based learning is a practical, hands on, situated approach to training that can provide an immediate return to organisations but not has been widely explored in an industrial context. It is collaborative and social in nature encouraging the learner to draw on a wide range of knowledge from different sources.

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Problem based learning

Problem based learning (PBL) is a constructivist approach to learning that has been widely used and advocated in higher education. It is used particularly in medical and nursing education. It is advocated by Dewey (1916).

Problem based learning (PBL) is a student centred approach to learning in which a teacher facilitates the activity by guiding the student in a process of inquiry. Thus the teacher plays the role of a mentor. It is known to positively affect learning outcomes and develop the skills that are critical in today's workplace namely problem solving, logical thinking, creative thinking (Sendag & Ferhan Odabas, 2009).

Within an organisational context, the student identifies a problem in the organisation and formalises a project to identify a solution (or a number of solutions) to that problem (Bell, 2010). It provides a number of benefits to SMEs (Bell, 2010; Walters & Sirotak, 2011):

- Provides immediate return on investment.
- Low cost.
- On the job training thus the learning is highly contextualised and situated.
- Practical and related to the SMEs needs and sustaining the organisations competitive advantages.
- Encourages innovation and independent thinking.
- Provides a greater understanding of a topic due to active learning, engaging in the material
- increased motivation to learn thus developing a learning culture
- Develops skills in critical thinking, leadership, communication, problem solving

To date no research has been conducted into the adoption of problem based learning in SMEs. Facilitated work based learning is a Danish project which examined the use of PBL in teacher training (Rokkjær et al., 2009) Saatci (2008) explored the use of PBL in an intercultural business communication course, however it was limited to introducing SMEs into the formal education curriculum by partnering with SMEs on real world projects which were predefined. A research group at the institute of future studies in Austria examined more the problems SMEs face with e-learning rather than problem based learning. The ENsel project conducted by Henley management college highlighted the fact that "Social interaction allows for co-construction of knowledge, which promotes engagement of learners in work based and problem-based learning" (Stewart & Alexander, 2006) in SMEs but did not examine the concept of PBL in SMEs and a model or framework for implementing such.

The learning layers project (Attwell, 2013) is currently focusing on technologies to support informal learning in SMEs, of which PBL is one strand. Similar to Saatci (2008) They are using PBL" to engage with student groups, who in computing or business ICT are often required to undertake a one semester programme undertaking a real project in conjunction with companies".

There is a significant gap in the research in the use of PBL conducted in an organisational context, initiated by an SME and conducted within a work based environment.

Hoffman and Ritchie (1997) consider PBL as 'a student-centred strategy that has significant contextualized, real-world, ill-structured situations while providing resources, guidance, instruction and opportunities for reflection to learners as they develop content knowledge and problem solving skills' (p.97).

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The main characteristics are:

- Problems are ill structured but authentic – Jonassen, 2000 has identified a number of problem types
- It is collaborative
- Student centred- the student takes the lead role and the tutor acts as a mentor
- There is no one solution

In addition there are several theories and approaches to problem based learning. Barrow has developed a PBL taxonomy, 1986, Jonassen, 1997 developed a number of steps to PBL, Wood, 2003 developed the Mastrict 7 step method, Hemlo-Silver developed three instructional approaches to PBL. However there has been no research has conducted into the most effective approach to PBL in terms of learning outcomes. In addition Jonassen, 2008 highlights that there is a lack of focus on problem solving approaches.

In a work place environment the approach to PBL will vary from the academic environment as the problem will not be predefined for the learner. It will be the responsibility of the learner to define a relevant problem to their company. Thus the learning is highly self-directed and company driven.

The success of PBL is largely reliant on sufficient guidance from a mentor. For SMEs this expertise may not always be in-house and they may need to leverage from external experts through networks and communities.

Mentoring

Mentoring is one of the ancient methods of human resource development, used by individuals and organisations particularly SMEs. Mainly as it can be done on the job and provides an immediate result. Mentoring requires significant social interaction and its success is based on the relationship between mentors and mentees. However varied success has been reported. This may because mentoring in SMEs largely unstructured, mentees are often paired with mentors based on job description and seniority. In addition there is no clear guidance about what the result of the relationship should be, often it is perceived as a method of allowing new staff to 'settle in'.

Eby conducted a study of three types of mentoring youth, academic and workplace mentoring (Eby et al., 2008). Of the three types of mentoring it was found that academic mentoring had the strongest association with outcomes, this may be due to the fact that it is targeted specifically at learning outcomes. Thus it is important to align mentoring programmes with actual outcomes in order for them to be of greatest success. Aligning a mentoring programme with PBL can focus this type of learning and ensure greater success.

Mentoring involves not just guidance and suggestion, but also the development of autonomous skills, judgments, personal and professional master ship, expertise, trust and the development of self-confidence over the time. It is particularly important for people with special needs to support them in utilization of their resources (knowledge, skill, aptitude) and to socially integrate them also into the work society. The nature of mentoring is "friendly", "collegially". Mentoring operates within professional and ethical frameworks (Richert, 2006; Hamburg, 2012a).

Mentoring offers a number of benefits for SMEs. Research has shown a positive influence on mentee performance (Fagenson-Eland et al., 1997; Barrett, 2006). Furthermore it addresses SMEs needs for timely, relevant training (Burgoyne & Hodgson, 1983), it does not require significant resources and is cost effective (Pawson, 2004). The most important benefits are a

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quickly introduction of new comers and support of integration of staff with special needs, however in terms of a more sustainable approach to learning it is important that mentoring has clear objectives, pairing this form of learning with PBL could enhance this type of learning to improve competitive advantage both in the long and short term while drawing on internal and external expertise.

Mazzoral et al. (2006) highlighted the role that outsiders can play in assisting SMEs. Often SMEs have limited internal expertise; however working in a social community they can acquire new skills in an informal, cost effective, timely manner that otherwise would have been impossible to develop. Technology now offers individuals and organisations the ability to collaborate with others regardless of time or location and acquire expertise quite easily without having to physically meet.

Communities and learning

It is known that PBL can stimulate learners by providing practical problems, cooperative working environments and the possibility to organize the learning process. Results of cognitive research show that students benefit from working together (Aderinto et al., 2008; Hamburg, 2012a) and they learn efficiently by solving problems, but it is necessary to develop approaches consistent with such research results. One of these approaches is a practice–oriented social Community of Practice – CoP (Wenger et al., 2002). Groups of people coming together to cooperate, solve problems, share knowledge, learn informally from each other in community either face to face or virtually (Hamburg, 2012b).

There are a number of positive aspects of CoPs:

- Improving the learning curve of new staff.
- Supporting new ideas for solving problems.
- Reducing rework and preventing "reinvention of the wheel".
- Responding more rapidly to customer needs and inquiries.

Through informal connections and learning that participants make in their Cops, members acquire social capital, which gives value to individuals and to the group. In CoPs members share information, which is boundless; they learn how to converse theory into practice to solve practical problems. CoPs help participants to bridge the gap between tacit knowledge (How) and explicit knowledge (Lesser & Storck, 2001). They are an ideal mechanism for supporting PBL.

Internet and the social media web have a vast potential to create prospering environments for emerging social, virtual CoPs (VCoPs). Web 2.0 (O'Reilly, 2005) can efficiently support activities within a community. It also supports the collaboration of SME staff through interactive web-based procedures as well as the concept of connectivism developed by Siemens (2005). Connectivism is whereby information is constantly changing, the learning, which takes place in distributed networks of people, is based on diversity of opinions. In connectivism content and services are adaptable and responsive to the specific needs and goals of SMEs.

Social media based on Web 2.0 and 3.0 offer the place for a fast knowledge acquisition and support within the communities (Hamburg, 2012a). Kaplan and Heinlein (2010) created a classification scheme for different social media types in their Business Horizons article. According to them there are six different types of social media: collaborative projects, blogs and micro blogs, content communities, social networking sites, virtual game worlds, and virtual communities. Many of social media services can be integrated via social network aggregation platforms. The technical skills needed to use social media are rather low.

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The use of social media with Web services and eLearning in CoPs improves the ability of members to socially interact with the technology used (communication with technology) and allow them to customize the content they are sharing online. Social media tools like Internet forums, weblogs, social blogs, micro blogging, wikis, podcasts, photographs or pictures, video, rating and social bookmarking are easy to use and can help to create a more dynamic community and provide an on-going conversation benefiting the members. The learners receive scaffolding through the help of others and facilitate more frequent interaction between students and teachers. CoPs developed with SME staff need not to be limited by geography or organizational departments; they can connect multiple departments where members experience problem solving strategies used by others; CoPs can include members for multiple organisations, fostering cooperation between business and government, education and business, professionals and volunteers.

ICT based social communities for supporting PBL

Web 2.0 has allowed relationships to be created across cultures, locations and professions. It has widened peoples network, Kim et al. (2011) reported the average American has 412 virtual connections with family and friends only accounting for a quarter of these. Kim also found that the most popular reason or using these sites was for entertainment purposes rather than seeking information. In addition to these people participate in online communities to seek professional, personal and domestic advice. Advice can range from how to discipline your children, to how to solve coding problems, to how to grow vegetables. Informal mentoring is more prevalent than ever. However within companies people are slow to share information in such an open way as in the public domain.

Often within companies management are unaware of how to exploit web 2.0 tools to facilitate learning. It is important for management to encourage learning, knowledge communication and information seeking rather than discourage this. The introduction of problem based learning in companies would encourage a learning culture. In addition the establishment of an online social community to address problems would provide a structured place for employees regardless of their company, industry or job role to share and acquire new knowledge.

To date ICT has been used widely to support informal learning. Online communities of practice have been the most extensively used approach particularly to support problem based learning in academic situations and has proved quite successful. Cho and Jonassen (2002), Donnelly (2006) and McLinden et al. (2006) have all conducted studies in this area and found that online communities of practice and discussion forums form effective assistance for the academic PBL method.

Social media can also be used to support PBL. It takes many different forms, including Internet forums, weblogs, and wikis. The technical skills needed to use such social media are rather low. Blog software, for example, can replace sophisticated and costly content management systems. It enables content providers i.e., reporters, writers, and educators, to concentrate on their content without bothering too much about the underlying technology. It is even faster, and less demanding, to communicate through social networks, such as Facebook, Twitter and others.

There are a number of content management systems (CMS) that can support collaborative learning. Tiki Wiki is a free open source wiki based CMS that could be easily adopted by SMEs to support social learning such as problem based learning.

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Tiki Wiki CMS Groupware, originally and more commonly known as TikiWiki or simply Tiki, is a free and open source wiki-based, content management system written primarily in PHP and distributed under the GNU Lesser General Public Licence (LGPL) licence.

Further research

This paper outlined the role of PBL in addressing some of the shortcomings SMEs have with current learning offerings. PBL can offer a targeted approach to learning that provides an immediate return while at the same time building a learning culture in the organisation. Online social communities provide a means supporting this type of learning and allowing SMEs to acquire external expertise effortlessly. Furthermore technology can maintain an anonymity that some SMEs require.

Due to the dearth of research conducted into work based problem based learning (PBL) an in-depth research needs to be conducted in this area. There are several methodologies and approaches to PBL in the literature however they have not been formally tested in terms of their performance outcomes. In addition for organisational problem based learning, there needs to be additional research into approaches to problem identification and problem definition as the problem is not provided by the academic and is at the discretion of the learner. Therefore an organisational approach to PBL should focus on the use of communities and individual efforts to:

- Determine an organisational problem
- Define that problem
- Develop research skills to enable learners to determine the cause or source of that problem
- Provide the support to determine the sources of information to determine potential solutions to the problem
- Offer support in evaluating the correct solution and applying this to the identified problem.

It is arguable whether both an academic mentor as well as an industry mentor is required. However the relevant expertise can be informally sought in virtual problem based communities, or mentors can be formally matched and use COPs for information exchange.

In addition PBL approaches and problem orientated communities need to focus on the learner articulating the metacognition that occurs behind their approach to problem identification, definition and solving. Learners need to be encouraged to reflect what has worked and why/why not it has worked and also specifying other areas in the organisation in which their learning can be applied.

It is suggested that professional industry bodies should consider creating online problem orientated social communities for their members to exchange best practices and knowledge.

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