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Developing design principles for an e-learning programme for SME managers to support accelerated learning at the workplace

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Abstract

Purpose – This paper reports on the development of a workplace-based e-learning programme for small and medium enterprise (SME) managers in five European countries. The course is designed to address the specific needs of SME managers who, it has been noted, represent a significant proportion of the EU workforce but often experience difficulty in finding time or resources to undertake relevant training. The aim of this paper is to present the design principles developed to underpin the programme. These principles were developed specifically to address the need for greater pedagogic structure in the design of e-learning courses.

Design/methodology/approach – The course design was informed by a literature review of e-learning and management learning and by a set of focus groups conducted to identify the specific concerns of SMEs with regard to accelerating their learning in the workplace. The course structure was further refined through trial workshops in all five partner countries.

Findings – The paper presents a pedagogic framework and a structured set of design features, both of which were built into the course as a result of the research undertaken. It also provides reflections on the efficacy of the design process that resulted in the formation of the design principles, and also the prospects for e-learning programmes in supporting accelerated learning in the workplace.

Practical implications – The design process and reflections may usefully be extracted to inform other cross-national or SME-focused e-learning programmes.

Originality/value – The paper draws on theory and research data to demonstrate the importance of thorough research in e-learning course development.

Keywords Small to medium-sized enterprises, Managers, Workplace learning, Learning

Paper type Research paper

Background to the study

The rise of digital technologies and high-speed communication links has not only revolutionized the 21st century workplace but has resulted in a shortage of the necessary skills which are needed to be competitive and successful in this new “connected” economy. It is also increasingly recognized that within this fast-changing workplace there is increased pressure to identify the most constructive and cost-effective ways of using communication technology as a resource for learning (Guile, 1998) coupled with an increasing emphasis on self-directed and lifelong learning (Delors, 1996; Diamantopoulou, 2001). Before the entry of ten new member states in



May 2004, small and medium enterprises (SMEs) represented 99.8 per cent of businesses in the European Union (EU)[1], employing over 74 million out of a total workforce of 112 million, yet they often experienced difficulty in finding the time or resources to undertake relevant training (European Commission, 2001). A recent survey found that less than 10 per cent of the EU workforce had received any form of training (Reding, 2001) whilst, despite the ever increasing availability of e-learning courses for use in the workplace, many of them have been perceived to be poor in quality and design (Massey, 2002).

This paper aims to describe how a recently completed funded project with partners from academia and business in five EU countries (the Czech Republic, Cyprus, Denmark, Malta and the UK)[2], collaborated in the creation of sound design principles to underpin the development of IMPACT[3], a 20 hour e-learning programme to support accelerated learning in the workplace for time-pressured SME managers. It was intended that managers taking this course would develop a better understanding of how they and others in their organization could become more effective learners in order to achieve improved management and bottom-line performance. At the end of the course it was hoped that participants would be able to:

- identify ways to build learning into everyday work;
- understand themselves better;
- recognise how important it is to reflect and learn from experience;
- learn more effectively from existing resources (particularly the web); and
- demonstrate improved soft skills (excerpt from the online promotional material for the course (www.pelm.eu.com/intrototrial.htm, accessed: 07 March 2005)).

The initial pilot for the course was to be offered to EU SME managers recruited by the project partners.

Creating a pedagogic framework

What does prior research say?

To date, much of the research into e-learning has been based on formal courses of study with prescribed learning outcomes and assessed tasks, often being based on students in further or higher education who present a relatively easily accessible group for research purposes. However, formalised study is seen by some as being irrelevant to the needs of work-based managers facing the pressure of day-to-day working and wanting training on a “just as needed” basis (Newton *et al.*, 2002; Moon *et al.*, 2003). Although e-learning has many perceived benefits for adult learners including 24/7 delivery – at home, at work or wherever they choose to be; personalisation; interactivity; networking of geographically distant learners; instant feedback and online assessment; e-learning courses have been criticised for their lack of pedagogic underpinning (Oliver, 2001; Stephenson, 2001; Laurillard, 2002). Therefore, in order to develop a pedagogic framework to support the course design described here, a series of reviews were carried out from the e-learning and management learning literature (see Table I for detailed references).

We found that there was marked convergence between the e-learning and management learning literature with the emphasis on providing learning materials and resources which offered opportunities for action, interaction, cognition and

Key themes	References from prior research
<i>Preparatory activity</i> Determine learners needs	Rogers (1969), Knowles (1984), Zemke and Zemke (1984), Brookfield (1995), Zemke and Zemke (1995) and Jarvela and Niemivirta (1999)
<i>Approach</i> Active/action learning	Dewey (1933, 1938), Revans (1980), Knowles (1984), Senge (1990) and Revans (1998)
Double loop learning	Argyris and Schon (1974a, b)
<i>Design feature</i> Environment/context/experience of learner	Kolb (1974), Vygotsky (1978), Kolb (1984), Brookfield (1986), Lave (1988), Lave and Wenger (1991), Nonaka (1994), Ramsden (1997), Brockbank and McGill (1998), Wenger (1998), Kayes (2002), Vrasidas and Zembylas (2003) and Vrasidas and Glass (2004)
Building on tacit knowledge Cognition	Polyani (1967), Nonaka (1994) and Eraut (2000) Rogoff and Lave (1984), Honey and Mumford (1992) and Richter (1998)
Clear route maps	Somekh and Richard (1991), Moore and Kearsley (1996) and Passerini and Granger (2000)
Scaffolding/tutor support	Vygotsky (1978), Knowles (1984), Weedon (1997), Wilson (1997), Laurillard (2002) and Merrill (2002)
Personalisable	Harris <i>et al.</i> (2000), Karagiannidis <i>et al.</i> (2001), Martinez (2001), Laurillard (2002) and English (2003)
Interaction	Moore (1989), Jonassen (1994), Mason (1998), Earle (2002) and Laurillard (2002)
Feedback	Reeves (1999), Schrum and Benson (2000), Vrasidas and McIsaac (2000), Laurillard (2002) and Vrasidas and Glass (2004)
Reflection	Kolb (1974), Schon (1983), Kolb (1984), Paton and Lay (1986), Harris <i>et al.</i> (2000), Vrasidas and McIsaac (2000), Walker (2000), Laurillard (2002) and Merrill (2002)
<i>Learner attributes</i> Learning styles/approaches Motivation	Honey and Mumford (1992), Carnwell (2000); Reeves (1997), Salmon (1998), Gray (1999), Maslow (1954), Johnson (1998) and Schein (2002)

Table I.
Key pedagogic themes identified from e-learning and management learning literature

reflection based on the learner's own situation and experience – the learner's social/personal/work environment all played a significant role in learning progress. A large number of studies referred to the pedagogical importance of scaffolding and support, with the tutor moving to the role of a facilitator of learning, with knowledge management and team working capabilities emphasised through the use of synchronous and asynchronous technologies. The constructivist view of technology-supported learning emphasised that technology should provide support to the learner making their own way through the e-learning environment, constructing knowledge and meaning through interaction, the use of authentic and contextualised tasks and through the use of self-reflection. The research studies also emphasised the importance of the individual's learning approach and reasons for studying online, as each person would have different motivations, background knowledge and aspirations

which would affect their learning outcome. It was also important to determine what were the learner's needs and expectations for an online course of study to maximise the likelihood of successful completion.

Another essential factor for successful learning in the e-environment was feedback, which was more than just a mechanism to inform the student how well they did on an assignment. In traditional face-to-face training nonverbal gestures would be constantly exchanged, however, in the online environment all the contextual cues of communication, which were important in creating the feeling of social presence, were lost. Students needed many opportunities for feedback on their assignments, participation in discussion, and overall progress. It was important to contact learners regularly to check if they were having any problems with the course, assignments, use of technology, and get their continuous feedback for improving the course.

Research demonstrated that experienced managers often had considerable tacit knowledge, which, if it could be made explicit and accessible, would help them to see where they could better apply such knowledge in appropriate situations in their own workplace. It had also shown that double-loop learning enabled managers to step outside their taken-for-granted world and seek genuine feedback about the outcome of their actions, which they could apply to their own business situations. Adults had been shown to learn well by actively "doing" rather than being taught and this view had been extended by the theory of Andragogy or adult learning which stated that adults learn best when they were faced with relevant subject content which was problem rather than content centred (Knowles, 1984). This had been extended by the idea of "action learning" whereby groups of colleagues in the workplace worked together on real problems encountered in the workplace.

In order to help inform the design process the pedagogical themes we have just described were placed under four sub-headings:

- (1) *Preparatory activity*: understanding what the learner wants.
- (2) *Approach*: supporting managerial learning.
- (3) *Design features*: areas the course design needs to address.
- (4) *Learner attributes*: what the individual learner brings to the course.

They are summarised in Table I which was used as an initial framework on which to structure the course. This research review clearly demonstrated that it was the manner in which technology was used to deliver e-learning to students which was the important factor in its success, and that to help achieve this success, at the very least, it should be reliable and accessible as well as easy to navigate (Moon, 2003). As Laurillard wrote, "the different ICT media have the capability to support the learning process very well, but will only do this if we fully exploit their properties" (Laurillard, 2002, p. 192).

Identifying the needs of SME managers

In order that the course would meet the specific challenges of the target market there was a need to understand what the SME managers wanted from an online course that aimed to help them learn more effectively in the workplace. Empirical research was undertaken in the partner countries using small focus groups of SME managers in order to ascertain their views about the course design as well as to gain information

which could be used for course content and to help set the context of the course delivery. Focus groups were adopted because it was felt that the form of interaction which they offered SME managers would not only be an appropriate means of teasing out their views, but would also offer a uniformity of approach for evaluation and reporting purposes, as well as meeting the strict project objectives. Thirty-seven SME managers attended six focus group meetings (one each in Denmark and Cyprus and two each in Malta and the UK). They came from diverse business backgrounds and experience, ranging from managing director to junior manager level, as well as three sole traders, and represented businesses covering business/financial services (15), manufacture/distribution (12), retail (4), leisure (1) and education (3) – 17 of which were micro or small companies. Discussions were around reflecting on a critical incident within their organisation that had proved challenging to them and to consider how they coped (or did not cope) and what learning they had derived from it. They also thought about what new knowledge and skills they would need to help them tackle such issues better in the future. The focus groups led to the identification of 11 themes around which the course structure was to be built:

- *Move the business forward*: create a culture of constant change.
- *Build a winning team*: build a team of people who share your vision and will help you to achieve it.
- *Communicate effectively*: establish good communications at all levels.
- *Cultivate networks and relationships*: cultivate a network and build relationships with other people.
- *Gain insights*: learn from experience, admit your mistakes.
- *Deal with people*: understand what makes people tick, be aware of your impact on others.
- *Handle information*: retrieve what is important, monitor key trends, improve your search skills.
- *Manage tasks*: plan thoroughly, establish priorities, delegate.
- *Focus on process and product*: correct balance can mean the difference between success and failure.
- *Take risks more safely*: move out of the comfort zone; be proactive, anticipate.
- *Tackle problems*: have a repertoire of strategies and creative approaches.

The outputs of the focus groups also included a number of case studies or stories (shown to be a useful management tool in encouraging reflection on real-life issues (Denning, 2001)) and these were to be rewritten to form part of the new course material, together with key design requirements from the SME point of view regarding what would constitute a successful online course:

- relevant to their everyday business lives;
- practical not theoretical and should include “real” stories;
- offer opportunities for self-reflection;
- give access to a virtual network of SME managers; and
- provide small bites or “chunks” of material to fit in with busy working lives.

The process described above demonstrates a marked convergence of the expectations of the course as revealed by the SME focus groups and the main themes revealed by the literature review described earlier. The importance of allowing time and the opportunity for personal reflection within the course design is clearly demonstrated as is the need to take account of the learner's own situation – seen to be particularly important when developing a course which will be undertaken across national boundaries with the additional problems of language and cultural differences. Equally important is the need to give SME managers real world practical tasks in order to build on their prior experience and knowledge.

SME manager development via e-learning – opportunities and constraints

In order for SME managers to readily accept an online learning course, they would need to be persuaded that it had immediate relevance and perceived benefits, to outweigh any costs involved from time spent away from their business role (European Commission, 2001). However, our review of e-learning showed that it offered both opportunities and constraints for SME manager development.

Opportunities:

- Contextualise learning to meet the needs of managers in different work contexts, including national, business sector and organisational differences (Vrasidas and Zembylas, 2003; Vrasidas and Glass, 2004).
- Self-reflection through the provision of tutor support and guidance as well as online journals (Laurillard *et al.*, 2000).
- Computer mediated conferencing (CMC) either asynchronous or synchronous can be used to encourage managers through their learning journey by offering peer and tutor support which can be accessed at times to suit their work/home commitments, as well as giving milestones for activities which act as a motivator (Moon *et al.*, 2003).
- Provision of stories can help to generate discussion and interest and encourage personal reflection based on practice and experience leading to personal learning (Denning, 2001). The electronic media offers a variety of ways of presenting these stories from text only versions, to managers speaking their own stories to full videos retelling the story, bearing in mind the practical reality of low bandwidth access for many SMEs.

Constraints:

- Despite the rapid growth of the use of technology and the internet in business, many are not well equipped to use it as a learning tool and the design principles described earlier seem to be of more relevance to study courses with prescribed learning tasks and outcomes which would not be relevant to the time poor SME manager (European Commission, 2001).
- Although literature shows that managers benefit from action learning in “action sets” to explore and test solutions to problems, the loss of media richness in technology-enabled communication means that unless managers meet face-to-face at the outset it will be unlikely that an adequate level of trust can be built up to develop successful sets online (Birchall and Lyons, 1995).

- Contributions to online discussions will be more likely if a course includes assessment and certification but this will be unlikely to be a motivator for some SME managers who might struggle to find the time to access an online course. A course tutor or facilitator can help to motivate and encourage but this has associated costs and can be a challenging process (Symons, 2001).

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Trialling the course design concept

The course design was to be based on the pedagogic framework described above but before work began on creating the online course, a series of five workshops were held with further groups of SME managers in all the partner countries with the aim of testing the course design concepts, identifying future business issues and needs and also to find out what cultural issues across the different partners counties needed to be addressed. Each workshop was run on a similar format using the same materials and resources. The total number of participants was 53, with each workshop ranging in number of attendees from 7 to 15 and they represented a wide range of managerial contexts. Just over half of the managers (28) worked in micro or small companies ranging from sole trader to up to 49 employees, with the rest coming from medium enterprises. Thirty-one came from private and 14 came from public companies, with eight representing other organisations such as charities (4) and adult education (2). Twenty-three worked in business/financial services; nine in manufacturing and eight in retail/distribution with the rest working in organisations ranging from non-profit making (4), government employees (4) to leisure (3) and adult education (2). They were all asked to complete a questionnaire at the end of the workshop in order to ascertain how relevant the workshop had been to their own business development needs.

Analysis of the questionnaire showed that participants felt that there should be a clear introduction and purpose to the course. Whilst finding the workshop content relevant to the workplace there was some scepticism about how it would work in an online environment. For many the main benefit they derived was interaction with their peers:

The interaction with others was key to the day. (UK)

A deeper understanding of how other managers from SME companies reflect on skill and knowledge and the development in these in the future. (Denmark)

Debating and feedback from other managers... (Denmark)

They particularly valued the idea of creating an SME network to create a network of like-minded people to share ideas with and to provide feedback: "made me even more aware that I can learn a lot from sharing" (Malta). The importance of reflective opportunities was highlighted in many of the responses, with the realisation that they could learn from success as well as from mistakes:

I stopped and thought about myself. (Czech R.)

I realised my weaknesses. (Czech R.)

Given time for reflection on issues that are important in my work. (UK)

A frequent comment was the workshop acted as a reminder of previous learning "reaffirmed a lot of what I knew but had forgotten" (UK). "Research fits in with my own

experience” (Denmark). There was support for the idea that time would prove to be a major issue, together with a wish to see the course modules simple and limited to key issues, “be down to earth” (Denmark), and that SMEs would need to be convinced that taking the course would be an effective use of their time.

It was clear that there was considerable commonality in the comments from all the participants in the five workshops as to how they perceived and reacted to the course design principles, despite the different national cultures they represented, ranging from northern to southern European. There was strong support from all the participants for having the opportunity to be more reflective in their working practices and for the considerable benefit to be found in finding the time and opportunity to actively network with their business peers, both nationally and internationally. There was some reservation expressed about national differences, “the cultural perspective should have a higher focus” (Denmark) but the overwhelming feedback from the workshops was that the themes identified for the course had resonance with SME managers across the five project countries (see above). The on-going challenge for the course developers was how to find a means of replicating the workshop experience in a totally online course.

Building the course

Building on the pedagogic framework identified above, and bearing in mind the situated nature of management learning (Williams, 2003), the course aimed to build on prior knowledge and experience to support the SME manager in developing new personal and managerial skills and was therefore underpinned by a constructivist approach to learning (Jonassen, 1994; Jonassen *et al.*, 1993; Reeves, 1999). A course design framework was developed which mapped applicable system features to the main design themes and types and nature of tasks, as identified by the project’s earlier research (Table II). It was based on a prior study looking at the nature of team activities (McGrath and Hollingshead, 1994) and a further study that considered how technology could be used to support the team process (Birchall and Lyons, 1995). Interactive technology like synchronous communication and online simulations could present powerful learning situations but the course design needed to reflect the practical reality for many SMEs who, in their every day working life, had access to PCs with low bandwidth and slow online access. Thus the emphasis in the course was to provide an asynchronous communication facility to encourage the sharing of ideas and reflections, supported by a tutor (with provision for one or two synchronous sessions) and to include activities which could be carried out in the workplace and then reflected on. The use of reflection by, for example, providing an online journal facility could be a powerful tool for self-awareness and learning (Laurillard *et al.*, 2000).

Reflections on the design process

One of the lessons that we have learnt from our experience thus far in the project has to do with the importance of developing a shared understanding and ownership of the project among all stakeholders. Ensuring commitment and shared ownership among all stakeholders in the program is important for its success (Vrasidas and Glass, 2004). By involving managers in the design process, trying out the material, and developing the content, it helps establish them as partners in the design process, which is

Design theme ^a	Type of task	Nature of activity	System features
Small “bites” or “chunks” of material to fit in with limited time availability	Course to be divided into “discrete” sections which can stand alone as an activity or be joined to others	Look at one business skill or theme. Short explanation, tasks, story(ies), useful resources and links with opportunity for reflection. At top level – key points – which link to tasks listed in this table	Re-usable learning objects. Clear design framework to guide the user and enable them to choose own route through materials. Ability to bookmark progress. Use technology to help contextualise data, e.g. translation: links to local resources
Self-reflection	Generating insights from formal and informal learning opportunities	Entering into a learning log Activities, e.g. “Think of own business situation to generate key learning points as well as any areas of weakness and action plans to address these”	Word pad facility that could be printed out. Text-based conferencing systems, email exchanges, bulletin boards, etc.
Interactivity	Test understanding giving quick feedback	Depends very much on content being covered but could include: completing an online quiz or filling in the missing pieces of a jigsaw/diagram	Java script or similar for interactive design plus “Dreamweaver” or equivalent for interactive tasks
Practical not theoretical tasks	Tasks to be carried out either on-screen or in everyday work situations	Refer to participant’s own workplace and experience. Could create a “learning set” of colleagues to work together on suggested activities	Host environment as attractive as possible to engage and keep interest
Case stories	Look at case story examples from SMEs	Using written/spoken/viewed case stories to discover what lessons were learnt and how they can be applied in own context	PDF files Audio/video technology (could be a problem for users with low band width) – have available as text
Virtual network	Create a network of SME managers supported by a tutor	Submit personal details and stories/questions/problems/useful info. etc. to a shared facilitated area. Tutor available to encourage discussion and reflection by posing questions and at set times for synchronous discussion	Synchronous/asynchronous technology (such as Placeware) – which could pose problems for SMEs with low bandwidth access

Table II.
Matching system features to design and task need

Notes: ^a See “Identifying the needs of SME Managers” above

important to ensure its adoption. By distributing some of the control of the program, managers are more likely to use it, be active participants, and make it serve their needs. Working together primarily in an e-environment has challenged project partners in the five countries. Their own “learning journey” has not been without its own tensions. The partnership put in place a process for reviewing its own learning, partly in order to better inform future course design but also to enable it to progress to other collaborative activity.

An e-environment creates challenges for the course designer seeking to adopt work-based learning as a basic approach, particularly when the programme is intended for use in many cultural settings. Learner expectations are not easily aligned when communication is exclusively asynchronous. Many mature learners do not understand the concept of work-based learning although they well may be practiced in their everyday work without being aware of the process.

One of the major disadvantages of text-based e-learning is the lack of visual and audible cues during communication. Body language, facial expressions, gestures, and voice intonation are all excluded from such an environment. A simple face expression can often communicate so much more than any text message. The same expression said with two different voices, can also have different meanings. This lack of richness of communication in cues communicated is one of the major disadvantages of e-learning projects (Vrasidas and Zembylas, 2003). However, e-learning provides ample opportunities for interaction. In online education, there are multiple kinds of interaction. Among these are interactions between, learner-content, learner-teacher, learner-learner, and learner-interface (Vrasidas and Glass, 2002). These interactions may be facilitated through various strategies. One such strategy is collaboration. Structuring collaborative projects is a good way to promote interaction among online community participants. Further, collaborative projects allow members of the community to have access to each other's expertise, as this expertise is distributed across space, individuals, and groups. For example, in this 20 hour course, asking participants to respond to tutor seeded questions and post to an online discussion area and reflect on and respond to other postings are strategies that promote interaction. The activities forming the basis of learning are not easily identified and engaged with without the spontaneity of face-to-face discussions: careful use of stories, web-based diagnostics and discussion areas are seen as a means of leading managers into the process of active learning.

Because of the constraints of the text-based e-learning environment, evaluation and assessment need to be carefully considered. E-learning programs require a variety of methods for evaluating and assessing participants' learning (Vrasidas and McIsaac, 2000; Mason, 2002). For example, given that the online facilitator does not have access to facial expressions, voice intonation, or body language, other methods of data collection can be used such as, the collection of information gathered from participants' work, participants' moderations of online discussions, their postings in online conferences, self-reflective journals, and other material developed and used while participating in the project. Early feedback suggests that SME managers are welcoming the opportunity to access learning and development but full evaluation of their experience is required to examine the extent to which the course has helped these managers to become better equipped as "learners" and reflective practitioners.

Conclusion

This paper has described the development of a design process for a 20 hour e-learning course for SME managers which was based not only on sound pedagogical underpinnings which were rooted in e-learning and managerial learning literature but also on the development of a clear set of design requirements and objectives derived from SME managers' business needs. There was marked convergence between the identified best practice revealed by the literature and by the expressed needs of the

SME managers. It is believed that the design and the reflections on the process presented here may be usefully extracted to inform the creation and development of other cross-national or SME-focused e-learning programmes.

Notes

1. Small- and medium-sized enterprises defined by the EU in May 2003 as: Micro enterprise: less than ten employees with an annual turnover or a balance sheet total of no more than EUR 2 million. Small enterprise: less than 50 employees and with annual turnover or a balance sheet total of no more than EUR 10 million. Medium enterprise: less than 250 employees with annual turnover of no more than EUR 50 million or e-balance sheet total of no more than EUR 43 million (Statistics in Focus, 2004).
2. PeLM (Development and trial of training programmes in learning through e-learning for managers and management/trainers developers) was a two-year project funded by the Leonardo da Vinci European Training Programme involving partners in the UK, Czech Republic, Cyprus, Denmark and Malta: web site: www.pelm.eu.com
3. For further information about the IMPACT course please contact the authors.

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