

# **Towards a Good Mix in Blended Learning for Small and Medium-sized Enterprises – Outline of a Delphi Study**

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**Abstract.** The mix that is suitable to target the specific learning needs and is likely to be accepted by SMEs has yet to be clarified. Recommendations for a good mix of blended learning in SMEs will be developed using a Delphi study design, implemented as a so-called e-Delphi. The sample will be SMEs from Germany and Ireland, international providers of e-learning, blended learning and lifelong learning as well as researchers in these fields. Recent experience with contacting selected participants for the Delphi study did show big differences for Germany and Ireland. First conclusions can be expected after the first round of the Delphi study has been analyzed in October 2006.

## **1 Learning in SMEs**

SMEs are often innovative, but under high economic pressure. This economic pressure is a threat to ongoing learning activities although continuous training and learning is necessary to stay competitive. Learning in the form of e-Learning is not in high demand with SMEs although one could expect that it is highly suitable to the learning demand at short notice (Wood & Watson 2002) which is typical for SME learning.

Blended Learning can combine the positive aspects of the two learning environments, classroom-based learning and e-Learning (Bonk & Graham, 2006).

A mix of learning styles and a mix of the different dimensions of learning at the course level can increase the usage of blended learning opportunities as a suitable way to learn in SMEs and thus increase or keep up competitiveness of the companies.

A blend of classroom-based with on-line learning seems to be the most efficient approach in many settings. The aim of this study is to explore: What is a good mix in blended learning for SMEs?

This leads to the following secondary questions

- Is there a good mix for SMEs from the IT sector in blended learning?
- Does this vary depending on the industry?
- Can an optimum definition be obtained for blended learning for SMEs?
- Can recommendations be given on how to adapt blended learning to SME learners' needs?

- What are the constraints in SMEs for not using blended learning?

A good mix in blended learning is characterized by satisfying particular preferences of the learner as well as meeting the learning targets.

e-Learning is “learning that is delivered, enabled or mediated by electronic technology for the explicit purpose of training in organizations. It does not include stand-alone technology such as the use of CD-ROMs”. The use of e-Learning depends strongly on the size of the company. Small and medium-sized enterprises use it considerably less than large companies (CIPD, 2006). A number of obstacles to e-learning have been identified in the SMEs organizational structure, the total lack of training culture within the companies and the attitude of individual managers. This leads to a lack of effective analysis of the competence needs and hampers contacting sources of competence (McCullough 2005; European Commission 2003).

E-learning is often perceived as ineffective and lacking in structure and lacking a means of learner guidance which leads to the overall impression of too high costs. The negative cost factor is further strengthened due to the payment structure of a number of e-learning systems which demand a high investment upfront. Many SMEs are not willing to take the risk of making that investment without certainty about the return on investment (Mc Cullough, 2005; Wood & Watson 2002).

Many modern e-Learning systems have very restrictive requirements. They will often run only on one specific operating system. Whereas web-browser based systems avoid this problem, they comprise of other challenges such as the need for a number of plug-ins and supplementary applications.

The diversity in applications intensifies fear of the systems, rooted in a general computer anxiety which can be addressed with including some human teaching intervention for basic tasks like using a mouse, opening a program etc. (Wood & Watson 2002).

## 2 Blended Learning

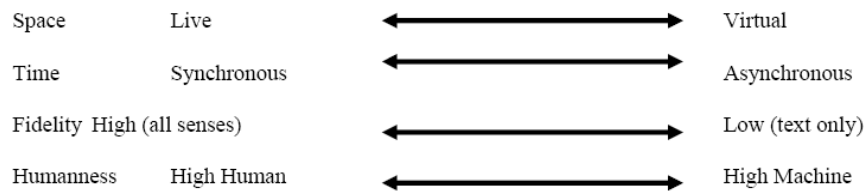
Blended learning describes a learning environment that either combines teaching methods, delivery methods, media formats or a mixture of all these.

In the literature the term is used to describe the integrated combination of traditional offline methods of learning with intranet web-based, extranet web-based or internet-based online approaches (Garavan & O'Donnell, 2003). To accentuate the fact that the concept is learner centered, blended learning can be described as a mix of delivery methods that have been selected and fashioned to accommodate the various learning needs of a diverse audience in a variety of subjects (Mc Sporrán & King 2002).

Blended learning combines classroom-based learning with computer-mediated instruction (Graham 2006; eLearning Guild 2006), but it also describes learning that mixes various event-based activities, including face-to-face classrooms, live e-learning, and self-paced learning (Valiathan 2002).

To describe the variety of interaction Graham (2006) introduced the four dimensions of interaction in face-to-face and distributed learning environments. The four dimensions are space, time, fidelity and humanness. Space can go from live to face-to-

face to mixed reality to virtual reality. The time dimension develops from live synchronous with a very short lag time to asynchronous, which has a long lag time. Fidelity reaches from a high level that is rich in senses, which means it can incorporate sound, pictures, text and even fragrances, and the other end of the dimension is using only one of the senses, e.g. text only. The humanness dimension addresses the ratio of human interaction and machine interaction.



**Fig. 1.** Four dimensions of interaction in face-to-face and distributed learning environments (Graham 2006)

### 3 Frameworks in Blended Learning

Poor design of blended learning material can lead to much poorer learning results in a blended environment compared with a single method delivery. Several authors developed frameworks to react to this challenge.

Wenger and Ferguson (2006) describe how their company has come up with a framework to guide the design and deployment of their trainings and courses. It reflects the idea that most learning environments are blended already, considering that even a classroom-only course incorporates a variety of different learning modalities.

Their approach consists of three steps:

In a first step the learning ecology matrix was developed. The x-axis illustrates the focus on the delivery of instruction that varies from “content delivery focus” to “experience and practice focus” and the y-axis illustrates who controls the navigation of the learning process which varies from “guided navigation” to “learner self-navigation”.

In a second step four general learning modalities are included, studying, practicing, teaching and coaching. These modalities do not refer especially to either classroom or e-learning, but are rather applicable to both.

In a last step the matrix is completed with distinct instructional, learning and knowledge elements.

Studying	Learner Self-Navigation	Practicing
Content Delivery Focus	Books, articles, guides References White Papers Asynchronous content Job aids Glossaries FAQs	Authentic tasks Role play Projects Case studies Peer discussion Discussion forums
	Classroom lectures Synchronous content Demonstrations Reviews/discussions Video Videoconferencing	Exercises Diagnostic labs Practice labs Mentoring/tutoring Experiments
Teaching	Guided Navigation	Coaching
		Experience and Practice Focus

**Fig. 2.** Sun Learning Ecology Matrix (Wenger & Ferguson 2006)

The learning ecology matrix aims at delivering a high quality learning experience and to provide control over the learning experience for both, the learner and the instructor. It strives at combining formal and informal learning rather than positioning them as opponents. The social nature of learning has to be considered in all learning elements. The aspect of cost-effectiveness is recognized, but merely in the sense that any project aims at a combination of learning outcomes at a total minimum cost.

It is intended to be used to provide guidance for the selection of delivery methods, considering the learning needs as well as available resources. Benefits, difficulties, constraints, but also complementary methods are listed to provide the information necessary to develop the right blend. The generic framework is then applied to specific learning needs.

#### 4 Obstacles in Blended Learning

As mentioned before SMEs use blended learning and e-learning significantly less than bigger companies. Every blend will be a trade-off from an economic perspective between cost of development, cost of delivery, time and effort and the available budget (eLearning Guild 2006). The biggest obstacles in implementing blended learning are lack of budget, choosing the right strategy and a lack of senior management buy-in. (eLearning Guild) The above mentioned methods and frameworks to design and deploy can be very helpful to find a satisfying solution.

## 5 Success Factors for Blended Learning

There is a variety of teaching methods, but also a variety of different learners with different preferences and needs. A well designed blend of teaching methods will provide the right learning experience for most learners. The characteristics of the audience have to be considered. This includes recognition of the amount of time they will have to access the content, which includes connectivity issues (Bersin 2003; Mc Sporrán & King 2005; Saunders & Werner 2004).

The flexibility in scheduling and format is critical to success. Students have to have access to most components of a system 24 hours to make it available when they are ready to study. The flexibility in media formats provides optimum learning experiences based on personal preference. To select the right methods and formats the learning styles and the education level of employees has to be considered as well as the motivation of the learners (Bersin 2003; Serveau 2004).

Response from tutors, subject matter experts as well as technical or logistical support staff needs to be posted within 24 hours, which corresponds to a rule of thumb for effective e-communication in general. The positive effect of a timely response can be intensified by additional phone calls and face-to-face conversations and will provide a sense that there are real people behind the online environment (Serveau 2004).

Blended learning needs executive support for the introduction just as any other major change in a business environment (Bersin 2003). The decision to change to a blended solution from the system that was in use before cannot be left to individuals who are not in charge.

The content naturally will be a success factor. Apart from choosing the appropriate kind of content and making the decision whether learning activities are intended to inform people, develop skills, or build competencies, the consideration of the time before information will be out-of-date is of high importance (Bersin 2003).

## 6 The Delphi Study

Expert opinion on the various aspects of blended learning is required from all knowledgeable parties involved in this discussion: SMEs, providers of e-learning, blended learning and lifelong learning, experienced users of blended learning as well as researchers in these fields. The study has to involve participants from different geographical areas, different areas of expertise and aims at combining these into a common result. This is accommodated by a Delphi study. Each round of questioning is followed with the feedback on the preceding round of replies. Thus the participants are encouraged to revise their earlier answers in light of the replies of other members of the group. The evaluation of these expert opinions aims at finding a common recommendation for future learning systems for the target group, learners in SMEs. A Delphi Study is the most suitable method to accommodate all these requirements (Turoff & Linstone 2002). To already apply a first selection criteria, easy access to the internet, web-based tools are used. This demands in return to focus on establishing a credible and trustworthy communication with the participants (Anderson & Kanuka 2003).

A Delphi process using web-based and email questionnaires as well as an online discussion will provide the data. Expert opinion on the various aspects of blended learning is required from all knowledgeable parties involved in this discussion: SMEs, providers, experienced users of blended learning as well as researchers in these fields. The study will therefore involve representatives of providers, such as developers, authors, trainers involved in blended learning or e-learning, as well as representatives of small and medium-sized enterprises (SMEs) as future users of the proposed systems, researchers involved in research related to e-learning, blended learning and lifelong learning and representatives from large companies as established users of the proposed systems and as control group. To

Panelists from the four panels of experts have a leadership role in the participant's professional setting, a credible performance record and good professional reputation, such as peer recognition, market success or scholastic contribution in their field. This structure should be applied for Delphi studies which include significantly different subgroups (Kennedy 2002).

Panelists will have varied perspectives, experiences, skills and expertise; all four panels may be influential in changing the mix in blended learning or the use of the educational products. These voices from four different professional areas such as SMEs, large companies, providers and researchers will speak from different yet powerful vantage points.

Expert opinion on a wide range of topics, from the view points of four differing areas of expertise may lead to a broad consensus on issues, but in others to a divergence of opinion. The study will investigate the intersection of ideas from the four groups of experts. The investigation will result in a thorough and realistic analysis of the issues around a good mix in blended learning.

The web based open-ended questionnaire in round 1 (September '06) has an estimated time of 30 minutes to two hours; however this will depend on the individual participant. Round 2 (October '06), again a web based questionnaire, has an estimated time of one hour to 90 minutes. Round 3 (May '07), a web conference will take approximately 45 minutes to one hour. These time estimates do not include time spent reviewing and responding to comments from other panelists.

The evaluation of these expert opinions aims at finding a common recommendation for future learning systems. The study will focus on SMEs in Germany and Ireland, involving international experts and will run from August 2006 to July 2007.

## **7 Expected Results**

We expect to find an answer to the question whether there is a specific mix or blend suitable for learners in small and medium-sized enterprises and whether there are any differences for learners from different industries or from different functions within the same company. If there are strong commonalities it will be interesting to see what they tell us. We expect to gain some information on ways to transfer existing concepts to SMEs and to identify research gaps and opportunities. In summary we will identify

concepts and data for Blended Learning in SME that will inform and encourage further research.

## References

1. Anderson, T. & Kanuka, H. (2003). *E-Research Methods, Strategies, and Issues* Allyn and Bacon Boston
2. Attwell, G., Dirckinck-Holmfeld, L., Fabian, P., Karpati, A., Littig, P. (2003). *E-Learning in Europe – Results and Recommendations* Retrieved January 12, 2006 from [http://bibb2.skygate.de/info3/upload/impuls\\_10.pdf](http://bibb2.skygate.de/info3/upload/impuls_10.pdf)
3. Beer, I., Hamburg, P., Paul, H. (2006). *E-Learning in kleinen und mittleren Unternehmen*, IAT report. Retrieved March 27, 2006 from [www.iatge.de/iat-report/2006/report2006-01.pdf](http://www.iatge.de/iat-report/2006/report2006-01.pdf)
4. Bersin, J. (2003). *What works in blended learning* Retrieved April 12, 2006 from <http://www.learningcircuits.org/2003/jul2003/bersin.htm>
5. Bonk, C.J. & Graham, C. R. (2006). *The Handbook of Blended Learning* San Francisco Pfeiffer
6. CIPD (2006) *Learning and Development Annual Report* Retrieved May 2, 2006 from [www.cipd.ie](http://www.cipd.ie)
7. European Commission (2003) *Observatory of European SMEs Competence Development in SMEs* Retrieved March 27, 2006 from [http://europa.eu.int/comm/enterprise/library/lib-entrepreneurship/series\\_observatory.htm](http://europa.eu.int/comm/enterprise/library/lib-entrepreneurship/series_observatory.htm)
8. Garavan, T.N. & Carbery, R. (2003). *Who Learns At Work? A Study of Learners in the Republic of Ireland* Retrieved April 14, 2006 from [www.cipd.ie](http://www.cipd.ie)
9. Garavan, T.N. & O'Donnell, D. (2003). *eLearning in Irish Organizations?* Retrieved April 14, 2006 from [www.cipd.ie](http://www.cipd.ie)
10. Graham, C.R. Blended learning systems: definition, current trends and future directions. In Bonk, C.J. & Graham, C. R. (2006). *The Handbook of Blended Learning* San Francisco Pfeiffer
11. Kennedy, A. K. (2002). *The Academy in 2005-2015: A Web-based Delphi Study* Retrieved July 14, 2006 from [www.ubcdelphi.net](http://www.ubcdelphi.net)
12. McCullough, C (2005). *Obstacles To Small Business Usage Of ELearning In Europe* Retrieved April 20 from <http://www.webpronews.com/ebusiness/smallbusiness/wpn-2-20050802ObstaclesToSmallBusinessUsageOfeLearningInEurope.html>
13. McSporrán, M. & King, C. (2005) *Blended Is Better: Choosing Educational Delivery Methods* Retrieved March 20, 2006 from [hyperdisc.unitec.ac.nz/research/KingMcsporránEdmedia2005.pdf](http://hyperdisc.unitec.ac.nz/research/KingMcsporránEdmedia2005.pdf)

14. Saunders, P. & Werner, K. (2004) *Finding the right blend for effective learning*. Retrieved March 15 2006 from <http://www.wmich.edu/teachlearn/new/blended.htm#move>
15. Serveau, K. (2004). Examining an Online Corporate Study Group. In G. Richards (Ed.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2004* (pp. 940-945). Chesapeake, VA: AACE.
16. eLearning Guild (2003). *The Blended Learning Best Practices Survey* Retrieved April 05 2006 from <http://www.elearningguild.com/>
17. Turoff, M. & Linstone, H.A. (2002). *The Delphi Method – Techniques and Applications* Retrieved March 29, 2006 from <http://www.is.njit.edu/pubs/delphibook/>
18. Valiathan, P. (2002). *Blended Learning Models* Retrieved April 12, 2006 from <http://www.learningcircuits.org/2002/aug2002/valiathan.html>
19. Wenger, M.S. & Ferguson, C. (2006). A learning ecology model for blended learning from Sun Microsystems. In Bonk, C.J. & Graham, C. R.. *The Handbook of Blended Learning* San Francisco Pfeiffer
20. Wood, D. & Watson, J. (2002). Factors Limiting the Proliferation of E-learning within Small to Medium Sized Enterprises. In G. Richards (Ed.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2002* (pp. 1049-1055). Chesapeake, VA: AACE.