

BLENDED LEARNING: CREATING THE RIGHT DELIVERY SYSTEMS TO SOLVE BUSINESS PROBLEMS

By

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ABSTRACT

This paper addresses the concept of blended learning, an approach that has been gaining popularity in recent years with the advancement of computer-mediated training solutions. It begins with an effort to define blended learning and a description of its historical context. A discussion of blended learning as a learner-centric approach follows, including a brief examination of the advantages and disadvantages of both instructor-led instruction and Web-based training in relation to the learner. The benefits and challenges and the basic steps necessary for creating a blended program are identified in this paper. Examples from corporate and military environments are included. The paper concludes with a look to the future of blended learning, whose growth and influence promises to soar in the coming years.

INTRODUCTION

According to a 2004 study published in *Training and Development Magazine*, 77% of U.S. organizations currently use blended learning, accounting for 16.1% of all training in the United States. The use of blended learning in the United States is projected to double to 29.4 percent of all training by 2006 (Sparrow, 2004). The notion of blended learning is based on using the right tool for the right job, and creating the right balance of instructional modalities. It combines the best of the old with the new while addressing organizational and individual needs. Large organizations such as IBM, HP, 3COM, Hyundai, C.N.A. Insurance, the U.S. Navy, and Lockheed Martin are investing in blended learning, with smaller groups and businesses benefiting as well.

Defining Blended Learning

As the notion of blended learning expands and matures, it becomes complicated to pin down any one definition. Brennan (2004) describes it as "any possible combination of a wide range of learning delivery media, designed to solve specific business problems" (p. 58). This includes a

number of instructional modalities: books, videotapes, audiotapes, hands-on practice, field training, computer-based training, Web-based training, Web reference sites, the Internet, the classroom, Web-conferencing, chats, audio-streaming.

Graham (2006) is critical of such a wide-ranging definition, believing it "waters down the definition and really does not get at the essence of what blended learning is." He asserts that, more specifically, "blended learning systems combine face-to-face instruction with computer-mediated instruction." Synchronous and asynchronous computer-mediated media can also be combined to form blended solutions (De Vries, 2005). Within academic literature, it appears that researchers prefer to narrow their definitions to two or three specific elements, likely to facilitate demonstration of clear cause and effect relationships, whereas in-the-field professionals seem to promote a broader, more practical "whatever works" interpretation.

Background

The history of blended learning in its most basic form, that of

combining face-to-face interaction with some other medium is long. However, it is not until recent times, that blended learning has come to have a more specific meaning. In addition to instructor-led training, supplemental training through such activities as reading books, doing research, using self-paced training presented from videotapes or CD-ROMs, and listening to an audio presentation have also been used to complement stand-up instruction over the past 25 years (Hearn, 2002).

The late 1990s brought another element to mix the addition of Web-based training (WBT), when everyone jumped on the e-learning bandwagon (Bersin, 2004). There was a rush by many companies to put all their training online, regardless of cost, but in due course they recognized that e-learning works well in some areas but not in such areas as learning that involves changing habits, behaviors, or attitudes (Hearn, 2002). As a result, organizations are becoming more receptive to the idea that instruction involving computers does not have to be an all-or-nothing proposition. Blended learning is a way to leverage technology as a force to create a learner-driven model that is reshaping fundamental techniques that have existed for centuries (Schacht, 2002).

Learner-Centric Model

The key to success is ensuring that the blend serves learners, and not just the delivery of teaching and training (Williams, 2003). As early enthusiasts of e-learning discovered, single delivery online courses do not work well in every area and is likely the case of serving technology rather than serving learner needs. To find the blend most advantageous to the learner, it is important to analyze what each modality has to offer. As referred to earlier, face-to-face instruction and computer-based training (CBT) are the two dominant aspects of blended learning, each with its advantages and disadvantages (See Tables 1 and 2).

Designers who combine these elements operate from the principle that training no longer has to be an either/or proposition. It can offer both learners and organizations, as is expressed over and over in the literature, the best of both worlds.

Advantages	Disadvantages
Ability to reach large numbers of learners, regardless of location	Does not encourage the natural generation of associated ideas and spontaneous discoveries.
Speed of delivery. New information can be incorporated quickly	There may be a tendency towards procrastination.
Consistency in instruction. Web-based content is the same over time, thus ensuring that the same key principles are emphasized... Regardless of where or when learners access the material. (Voci, 2001)	The medium is considered to be impersonal by many, which may cause a lower satisfaction level with the process.
Self-paced learning allows learners to work through subjects as quickly or as slowly as they choose, to repeat topics.. Or skip topics that have already been mastered. (Voci, 2001)	
Well - Suited to the presentation of facts and concepts	
Flexibility and convenience for both learners and instructors.	

Table 1: Web-based Training

Advantages	Disadvantages
Social interaction that human beings need and enjoy by affording a direct exchange of ideas. (Voci, 2001)	Participation: Can not always have every one participate, especially if there are dominating personalities. (Graham, in press)
Familiar and comfortable method	There may be a tendency towards procrastination.
Interactive learning environment in which learners can test their own attitudes choices, and reactions against those of their peers and an authority figure- enabling them to receive immediate personal feedback about the appropriateness and acceptance of these responses. (Voci, 2001)	The medium is considered to be impersonal by many, which may cause a lower satisfaction level with the process.
Access to in-person real-time expertise.. And the energy and enthusiasm of group learning.. (Schacht, 2002)	
The presence of a trusted mentor in the learning process. (Schacht, 2002)	
Well-suited to problem -solving activities and changes in attitudes and behaviors.	

Table 2: Classroom Instruction

Benefits of Blended Learning

The benefits of blended learning range from the easily quantifiable to the intangible. One must keep in mind

while assessing the positives of blended learning that groups using it fall on a continuum of those who have never used WBT to those who have used it exclusively. There are benefits for all, but those benefits may differ in scope and scale.

Effectiveness

A significant benefit to using blended learning is that it seems to work better and more inexpensively than single-delivery systems. According to a 2004 survey of U.S. and U.K. companies, 65% of U.S. respondents selected blended learning as the most efficient training method (Sparrow, 2004). The Thomson Job Impact study completed in 2002 found that learners in blended programs were 30% more accurate in performance and were able to complete real-world tasks 41% faster than those participating in e-learning only (Barbian, 2005). By addressing both learner and organizational needs, blended training appears to produce more effective and longer lasting results. In addition, blended learning is particularly suited to certain kinds of training. When dealing with complex material and a business need that requires people to internalize and change their behavior, using multiple media to get much higher completion and results (Bersin, 2004).

Cost

By thinking about every problem as a blending challenge, one can select the lowest-cost media that solve the problem (Bersin, 2004) resulting in a positive return on investment. A single delivery system of instructor-led training, for example, can involve significant travel and overhead costs. By offering some portion of the course online (e.g. introductory material) the costs and time for expensive face-to-face instruction can be reduced, as well as other associated costs. For organizations whose single delivery system is computer-mediated, a blended solution can lower the costs of do-everything learning

management systems, as well as reduce high-end technical requirements for simulation and problem-solving software programs. When instructors handle the higher order thinking exercises and practice that delivered online would be technically demanding at the PC and bandwidth level, learners' work or home computers can be sufficient for study without significant upgrades. Another cost-related value comes from the reduced opportunity cost incurred when employees are away from their jobs for training.

Time

There are a number of benefits related to time with blended learning. First, face-to-face class time can be shortened if basic, factual work, such as pre-course introductory material, can be delivered via a computer or other learning delivery mechanism (Williams, 2003) to reduce time away from the job to attend training. Second, thousands of people can be reached simultaneously eliminating training bottlenecks (Bersin, 2004) and increasing the numbers of people that can be trained within the same amount of time. Third, whereas initial development takes time, deployment is fast (Bersin, 2004) and updates and modifications can be supplied within hours as opposed to days or weeks.

Flexibility

By blending learning, course developers have more choices as to how to achieve a learning goal. When not limited to a single delivery system, they can choose from all the "tools in their toolbox" and deploy the modalities, which they feel are most appropriate for a given skill set, the number of students, time available. This will result in a more effective training situation.

Learner satisfaction

In providing information through more than one channel, the blended learning approach respects learner

difference in style, yet also provides the much needed social interaction that human beings seek and enjoy (Voci, 2001). As Meiklejohn (1882) once said, "learning is a social act." This opinion is echoed by Schacht (2002) who finds that humans are social creatures and for many...the social environment of the learning process is as important as the availability and quality of new skills and knowledge. Combining self-paced learning with facilitator support keeps the learner from feeling isolated, which assists in the successful completion of self-paced modules (Valiathan, 2002).

Challenges of Blended Learning

Blended learning, for all its perceived benefits, is not without its challenges. Before any blended program can be a success, a number of tangible and intangible factors must be addressed.

Infrastructure

Bersin (2004) finds infrastructure very problematic in most corporations, citing:

- ? Insufficient bandwidth connectivity in remote or foreign locations
- ? Differences in PC browser versions and plug-ins, necessitating standard content, hardware and software requirements can be set
- ? Expense and complexity of learning management systems which may not be complete
- ? Massive throughput in a short period of time [during deployment]
- ? Establishment of metrics up front

Other technical issues involve accessibility of e-learning materials for mobile workers, technical support mechanisms for learners and instructors, and backup contingencies in the case of Internet failures (viruses, server crashes).

Initial investment

Converting a classroom-based course, including a new delivery system, standardizing learner PCs, or modifying an existing course requires substantial start-up costs.

Consistency

If the content material of the online and offline segments of the training are to be developed by different parties, or if a redesign is taking place as mentioned above, close coordination and collaboration between providers of both elements in the early phases of designing the program (Kim, 2004) are necessary to ensure a uniform message.

Blended learning expertise

Currently there is a lack of vendors with experience in producing blended learning solutions (Johnson, 2004). Added to that, the existing business models of e-learning companies and instructional design companies are quite different (Johnson, 2004). Therefore, if an organization chooses to purchase an existing system or service, substantial redesign may be required to incorporate blended learning principles, resulting in additional expense.

Trainer mindsets

Blended learning requires training professionals to think like business people. Their role has turned from a content problem into a systems infrastructure, architecture, and business problem (Johnson, 2004). Many trainers suffer from a lack of vision as to how they might incorporate technology-based lessons into their stand-up courses (Hearn, 2002). In addition, they must get past thinking that technology-based training is not considering basic learner needs, such as being mentored by an instructor and interacting with peers (Hearn, 2002).

Motivation

Low levels of student motivation and engagement are often associated with online learning (Kim, 2004). One explanation for this low motivation is that the e-learning

aspect of a program places a greater burden on the individual participants, who are forced to find alternative times to complete their online course activities, which often means after working hours or on weekends (Kim, 2004). This increased time commitment, in addition to the potential isolation associated with online activities, requires that developers carefully link online and offline activities that encourage learners to participate and complete their training.

Choosing Blended Learning

There are many factors that drive organizations to consider blended learning, foremost of which may be to address significant business issues. Possible reasons for activating a blended learning solution are (Johnson, 2004):

- ? Strategic change (organizational re-alignment and new job roles)
- ? Sales development (to train a direct sales force)
- ? Market education (to affect purchasing behaviors)
- ? Business process improvement (to accommodate loss of staff or customer dissatisfaction)
- ? Employee development (to cultivate a learning culture, to improve employee satisfaction, retention and increase productivity)
- ? Compliance and mandatory certifications

Graham (2006) reports three broad reasons for why people choose blended learning. They are: for improved pedagogy, increased access/flexibility, and reduction of costs. Some more specific reasons include reduction of training costs and participant time away from the job (Sparrow, 2004), and desire to be on a par with competitors.

Creating the Blend

The process for developing a blended learning solution is much like that used for any instructional design. The first step is *analysis*, where one must examine the business

problem by asking: What is the business problem or goal? What is the learning problem that is creating the business problem? (Bersin, 2004)

The decision wheel (Douglass, 2005) (See Figure 1) is similar to any that might be used for developing a training program. The difference lies in the "Content" and "Organization" sections where questions specific to blended learning are raised. Additional steps in analysis include an inventory of

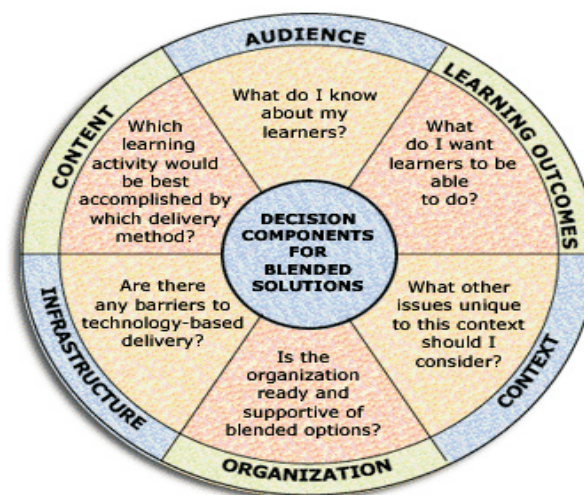


Figure 1. Decision Wheel

available human and technological resources, estimation of program costs, and an assessment of the kinds of upper-level support required.

Design and Development

After the completion of analysis, the next step is course design and development. Here the course objectives must be set and the required skills or information mastery also has to be identified and listed. Once the skills are identified, the design team determines which modality or combination of modalities would be most effective for each skill and in which order they will be used. Designers of blended courses often have as their goal to reduce the amount of expensive, face-to-face instruction time spent on the transmission of foundation skills and knowledge.

Here WBT, well suited to the presentation of facts and concepts, can be utilized to address basic information before moving on to the instructor-led segment. This ensures that the learners are all on essentially the same page before joining in more interactive, application-oriented activities with an instructor and classmates. Figure 2 shows an example of how online and offline elements can be blended:

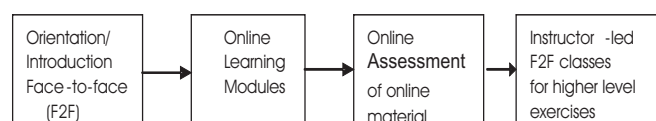


Figure 2. Example of blended learning

There is no limit to the possibilities in creating a blended course. One could convert an existing traditional course, pulling out those elements that could be delivered via CBT without any loss to the quality of learning (Williams, 2003). Or, as one of the simplest approaches, create electronic content and “surround” it with human interactive content which enables to create high interest, accountability and true assessment of the result of the e-learning program (Bersin, 2004). Even with the numerous design possibilities blended learning offers, there are several elements that should be present: channels for student and instructor feedback, a structured course schedule, program support, communication options, and opportunities for face-to-face interactions.

In developing the different aspects of the training, consistency of message and content across modalities must be maintained. This can be a challenge if different groups are responsible for developing individual segments of the training. One developer reports working with the WBT segment literally in front of him to ensure that all of its key elements were drawn out and put into practice during the classroom sessions (Williams 2003).

Implementation

The single biggest issue that companies reported as spending time and money on is, ‘marketing’, launch and deployment process and requires an integrated go-to-market plan (Bersin, 2004):

- ? By providing executive support to the line managers they in turn can give workers time to take courses.
- ? Launch of a new program will make the people to understand the importance and urgency of the program
- ? Give education for local coordinators, so that line managers and line training people can support the program
- ? Rapid feedback of problems will reduce the delay, from days to hours.
- ? Integration of training with company's existing business processes
- ? Marketing to stakeholders: what's in it for me?

Evaluation

Evaluation of a blended learning program is essential for improving subsequent programs and delivering more value to individual participants and the organizations in which they work. Feedback from participants and managers, Level I and Level II respectively, should be obtained to determine learner satisfaction and the effectiveness of the program. Feedback from other stakeholders throughout the organization on training design, development and delivery should also be sought.

Examples of Blended Learning

Blended learning is being utilized across the spectrum of training programs, from large corporations, to the military, small businesses, and higher education.

Hyundai Motor Company

Hyundai has instituted a blended learning program as part of its “future leaders” program. It begins with an in-person orientation session to communicate the program's

objectives. A six-week online learning period follows, focusing on business foundation topics. Activities include reviewing lessons and case materials, completing case task assignments and participating in asynchronous online discussion with classmates and instructors. Once completed, students attend a one-day offline session and take an assessment test. If successful they continue with another six-week segment focusing on specialized tracks. Following a second assessment, learners move on to a seven-month offline course that focuses on advanced learning and application of topics (Kim, 2004).

U.S. Navy

As part of its mission "to become the world's best workforce development organization," the Navy has made refining processes while building blended learning solutions and reusable educational products top priorities (Harris, 2005). Using the Five Vector Model, a performance management system, sailors' entire military careers are mapped out. Skill sets that need to be mastered and the medium are linked to each other ("resident schoolhouses," e-learning, correspondence, or combination) and designated to provide training.

3COM

As part of 3COM's various certification programs, partners take an introductory course, followed by a virtual lab course, then a Web assessment test. Once they complete the assessment test, they attend live training and take the final exam (Johnson, 2004).

Sea Island Shrimp House

See Inland, as a small business with a relatively narrow range of skills that require mastering, is using blended learning to reduce the time. Managers must spend with new employees without draining the training budget of a total e-learning program. With a modified off-the-shelf application for testing and tracking and learning modules

created for each position in the restaurant, new hires can now complete their orientations and paperwork online before beginning the hands-on portion of their training. This system saves the manager an hour and a half per employee and has resulted in a 50% increase in job understanding by new hires. Instruction, material updates and trainee score reporting take place over the restaurant's broad-band Internet connection (Nation's Restaurant, 2003).

Conclusions

The Future of Blended Learning

Due to the broad, holistic nature of blended learning, it may take time for its full value to be recognized and accepted. Only when it becomes a seamless package of delivery mechanisms can it be described as a new learning technique (Williams, 2003). As bandwidth increases, e-learning developers will be able to incorporate more hands-on interactions, realistic simulations, personalized lessons, and live instructor-led training delivered over the Internet (Hearn, 2002). Beyond technical advancement, blended learning represents a cultural shift and an organizational blend that continues to find its legs among the educators, implementers, and employees who are learning as they go (Barbian, 2005). As these stakeholders become more comfortable and skilled at blended learning, it is possible as Graham (2006) predicts, that blended learning may become so ubiquitous that we will eventually drop the word "blended" and just call it "learning." That day may still be far off, but it does appear that blended learning is here to stay and will only increase its influence on the training and development world.

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