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Strategies and Techniques for Designers,
Developers, and Managers of eLearning

JOURNAL™

THIS WEEK — MANAGEMENT STRATEGIES

Blended Learning for Product Knowledge at Boehringer-Ingelheim

BY HARALD WENSKÉ

Boehringer-Ingelheim is among the top 20 pharmaceutical companies in the world, with a particular focus on prescription medicines and consumer health care. We face particular challenges in keeping our field workers and district or area managers updated in their knowledge about products, which is especially important when new products are launched.

This article describes our experience in 2001 and 2002 with development and rollout of a blended learning program to support our products for the treatment of chronic obstructive pulmonary disease (COPD). The emphasis is on what we learned about project management rather than on the development tools or on the design of the blended learning materials.

The target audiences were field workers (FWs) and district (area) managers in Germany. In total, 293 people took part in the training. A third of the participants have a university education, a third are licensed professionals under the drug laws in Germany, and a third are direct entrants from other professions.

Computer literacy is important for using Web-based training (WBT) and for using training delivered on CD-ROM (which we distinguish by referring to it as CBT). The level of computer literacy is varied in our target audiences. We estimate that approximately 30% of the field workers have a high level of PC knowledge. Some of them own a PC themselves and use it intensively or are training themselves in this field of their own accord. Approximately 50% use a laptop and software to conduct company business without any great difficulty. Approximately 20% experience significant difficulty in using the laptop to conduct company business. Experience from pre-

Continued on next page

Blended learning continues to be a very useful approach in many situations. Boehringer-Ingelheim uses a variety of media to deliver focused product and medical knowledge to field workers in Germany, and is expanding this approach to its sales team world-wide. Read this article about their lessons learned to find valuable tips for your next product launch!

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As in any profession, there are many different perspectives about the best strategies, techniques and tools one can employ to accomplish a specific objective. This **Journal** will share these different perspectives and does not position any one as "the right way," but rather we position each article as "one of the right ways" for accomplishing a goal. We assume that readers will evaluate the merits of each article and use the ideas they contain in a manner appropriate for their specific situation. We encourage discussion and debate about articles and provide an Online Discussion board for each article.

The articles contained in the **Journal** are all written by people who are actively engaged in this profession at one level or another — not by paid journalists or writers. Submissions are always welcome at any time, as are suggestions for articles and future topics. To learn more about how to submit articles and/or ideas, please refer to the directions in the box on page 9 or visit www.eLearningGuild.com.

vious education, and other education events on the PC and various software programs, indicates that older employees are more likely to have problems using software and hardware than are younger employees; even so, in exceptional cases, older colleagues do have extensive computer knowledge.

Our blended learning solution was a multiphase and multimedia solution: multiphase because periods of distance learning alternated with workshops; multimedia because, in the two distance learning phases and in the three workshop phases, we used several different media and methods, including printed materials. Table 1, below, will give you an overview of the media and methods used in the different phases.

A curriculum was developed for each learning period. The contents of each curriculum were the learning objectives, the content, a timeline, the media and the methods. The length of the learning periods reflected one of management's requirements: minimize the sales representatives' time away from their territories. The curriculum design overall is intended to accommodate the needs of the different adult learning styles.

Our approach to e-Learning at Boehringer-Ingelheim

As Horst Dichanz and Annette Ernst point out, e-Learning providers attempt in their advertising to associate "e-Learning" with "easy learning," "entertaining

learning," or "effective learning." But irrespective of these characterizations, "e-Learning" stands for "Electronic Learning" and in the final analysis, the focus and management of e-Learning should still be on the "e" for "electronic" and most especially on "learning."

Let me begin by summarizing the way that we at Boehringer-Ingelheim view e-Learning. e-Learning for us is a kind of distance learning or self learning method. There are various definitions of e-Learning in the literature. Broadly speaking, e-Learning means learning using electronic media, but in the narrower sense, this is learning using the computer. We take e-Learning to include both online and offline forms — that is, it may be delivered either on or off the Internet. Where e-Learning is used in the context of online learning, it refers to learning on either the Boehringer-Ingelheim (BI) intranet or on the Internet. We refer to either of these as "Web-based training" (WBT). In the context of offline learning, e-Learning refers to learning delivered via CD-ROM, which we also refer to as "computer-based training" (CBT).

We have also been influenced by the writing of Dieter Brinkmann, who discusses the two developments that have led to multimedia and electronic forms of learning:

- Technology, specifically the invention and refinement of microprocessors, the spread and general use of the comput-

TABLE 1 Overview of our blended learning program

	Media (details or target)	Methods
Distance learning	<ul style="list-style-type: none"> • Printed materials (7 modules) • WBT including audio, animations, pictures (14 modules) • CD-ROM • Fitness center (9 tests with about 100 questions; threshold for a certification > 70% right answers) • Forum (communication) • E-mail (communication) • District meetings (communication) 	Inductive method (from specific to general)
Workshops	<ul style="list-style-type: none"> • Videos • Lung function spirometer • Flipcharts • Slides • Original publications • Device training kits 	Inductive and/or deductive method, classroom sessions, teamwork, individual work

er, the networking of computers to create the world-encompassing Internet, and finally the easy-to-use interface of the "World Wide Web."

- Changes in didactical concepts, from linear designs in the 1960's (programmed instruction or programmed teaching) to today's interactive designs and the continued evolution of collaborative and cooperative designs.

In this article, we give some answers to the question: "How can we manage e-Learning in all stages of the process?" This article is based on a case study and the final thesis of a postgraduate study evaluating the e-Learning concept. You will get an insight into the general management procedures of e-Learning, especially Web-based training (WBT), coupled with practical experiences.

(Editor's Note: You may also want to see the articles by Russ McNealy published earlier this year in **The eLearning Developers' Journal**, "Making e-Learning Work at AIG Japan: A Case Study" (April 7, 2003) and "Peeling the e-Learning Onion: Implementing an e-Learning Program" (June 30, 2003), for additional ideas about implementation of blended learning approaches from a point of view that is not "American.")

How do we think about e-Learning projects?

In the literature, e-Learning projects are often discussed as having three functional phases:

1. Analysis and storyboard production
2. Production
3. Implementation, evaluation, and maintenance.

Timelines

There have been two popular ways to think about these phases with respect to project timelines. (See Figure 1, above.) William Lee and Diana Owens have divided the whole project time into equal shares. Joachim Hasebrook has developed the "Hollywood process," which mimics the production of a movie. In this method the storyboard production is very important and accounts for 50% of the whole project time.

For both of these models, "the e-Learning project" refers only to the development and implementation of the software — the e-Learning application itself. But what about incorporation of e-Learn-

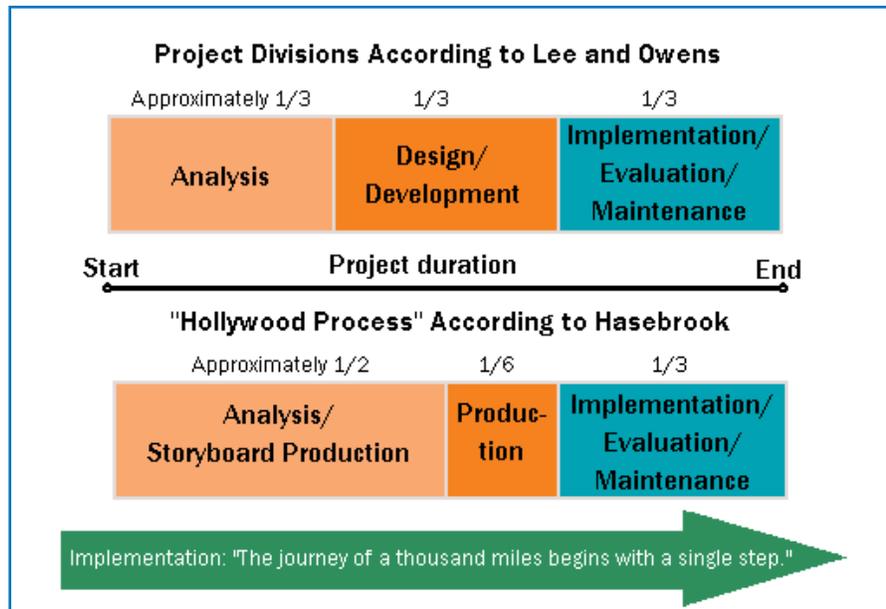


FIGURE 1 Stages of development of WBT and temporal dimensions.

ing into the company structure and processes and into the thinking and behavior of the managers?

Implementation of the software is only one narrow dimension. Experience has shown that colleagues in the project who have different responsibilities have different perspectives and their priorities may change over the project life. Stu Tanquist has summarized 22 pitfalls for implementing WBT, and he finds that they fall into three broad categories: false assumptions, planning and preparation, and implementation. To avoid these pitfalls, communication, motivation and persuasion are necessary within the whole process and they are sometimes difficult to achieve. Even just having a discussion about e-Learning can influence the learning culture within a company. Therefore "implementation" is multi-dimensional.

Marketing perspectives

So we come back to the question, "How can we most effectively implement e-Learning?" We might learn a lot by asking how to launch a new product. From marketing we learn that there are three different phases in a product launch:

1. Pre-launch,
2. Launch, and
3. Post-launch, or Life cycle management.

In all three phases, marketing and promotion are important success factors. In

addition, ROI is important in a product launch. For a marketing and sales manager, ROI generally stands for "Return on Investment" but it can also stand for "Region of Interest." That is, regions marked by different responsibilities, different perspectives, different priorities. Two perspectives — managing the separate phases and evaluating the ROI (in both senses) — must be addressed by the implementation plan.

Lessons learned — Managing the pre-launch phase

We have developed a "Top-10 list" for managing the pre-launch phase. These are the 10 things that must be attended to in pre-launch to ensure a satisfactory implementation.

1. Management preconceptions and requirements

To meet management's needs, you should know management's preconceptions and their requirements. Most of the time, the top managers are not experts in training, so you should be ready to support your proposal, including presenting the differences between training methods and the strengths and weaknesses of both distance learning and face-to-face training in workshops.

2. Involve those affected

We found that it was a must to involve colleagues from the following departments and levels in all activities: general

management, marketing, sales, medical, IT, human resources, and the works council (this is primarily a concern in Germany, and is discussed below).

A project team should be set up, with agreed-upon responsibilities. There should also be an agreement about the number of learners, the objectives, the training methods (distance learning vs. workshops), other training materials and media, the timeline, evaluation methods, and the budget.

In our case, the main project team consisted of one person each from medical, marketing, training, IT from BI, and a person from the co-promotion partner. The major goals and the timeline of the project team were:

- Create and present the whole training concept (February — March 2001)
- Choose the right agency to produce the WBT and the written materials (March — April 2001)
- Develop and review the content (written materials, WBT and CD-ROM) (May — October 2001)
- Make sure of the proper installation of the software tools and content modules of the WBT (November 2001 — January 2002)
- Develop and facilitate the workshops (February — June 2002)
- Inform the general management and present results internally
- Ensure internal communication
- Evaluate the whole learning process

In total more than 130 different activities were coordinated with a project management plan.

3. Conduct an analysis of knowledge and experience

This means identifying:

- Computer knowledge level of the learners
- Learners' experiences in distance

learning

- Content knowledge level of the learners.

All of these topics are important. If you misjudge the level of any of them, you risk alienating the users, and also having problems with future applications of e-Learning.

In addition, e-Learning as a type of distance learning has a number of strengths (learners are aware of their responsibility for learning, delivery is not dependent on time or location, etc.) and a number of weaknesses (less communication, social isolation of learners, etc.). There are also changes in the perception of roles as a result of differences from traditional learning forms. Brinkmann's summary of these changes is shown in Table 2, below.

If you have only limited experience in distance learning, one way to introduce e-Learning is to start with a small project or an open learning project with written materials. In any case an evaluation tool, which may take the form of a questionnaire, focus group, etc., should follow the learning experience to evaluate the knowledge level, the users' perception, etc.

Finally, you should find out in detail the learners' existing level of content knowledge, because this will affect the objectives and the content to be delivered.

4. Analyze the technology infrastructure of the company

This is another must. We found the following questions helpful:

- What are the IT standards (software and hardware)?
- How diverse is the end-user technology?
- What bandwidth is available to learners?

Because you should only work with vendors and contract courseware developers who support your hardware and software standards, IT should be involved in the early stages of pre-launch activity, and their vote against a vendor or developer should be a "knock-out" argument.

The answers to the above questions will also indicate whether on-line (WBT) or off-line (CBT) training is most appropriate. Bandwidth is probably the most important single factor in making this decision.

"Hybrid" solutions are possible where bandwidth is insufficient for WBT. Here the user can get the content and tests on CD-ROM, and the results of the tests are uploaded to an evaluation tool. It is also possible to deliver the content via CD, and to have the test on a remote platform (intranet or Internet).

5. Works council

This element will vary by country and by individual organization. The discussion that follows here is based on the situation in Germany, since that is the context of our project.

The role and the rights of the Works Council in Germany is written in the Works Constitution Act (Betriebsverfassungsgesetz, 1st August 2001). The goal of the Constitution Act is to carry out the idea of partnership by co-operation and the rights of co-determination of all employees in the enterprise. Therefore the works council is a core element of the German system of industrial relations, and by law the distribution of seats is fixed by establishment size (number of employees). The works council are representatives of the whole workforce and are formally independent of unions. The Works Constitution Act does give the unions some rights as an adviser to the works councilors.

This new Works Constitution Act will provide social partners with the opportunity to bring the structure of employees' interest representation into line with modern forms of company organization and will introduce new issues for participants. Most prominently, works councils will have the right to suggest measures on skill upgrading and further training which are likely to safeguard employment. As works council colleagues on the project team can develop many opin-

TABLE 2 *Change in the perception of roles as a function of the learning forms*

	Role of the learner	Role of the teacher
Traditional learning forms	Classic student	Classic "impartor of knowledge"
Modern learning forms	Self-educator	Advisor
	Trainer learner	Trainer
	Player learner	Game organizer
	Member of learning team	Moderator
	Surfer	Producer of educational media

ions about e-Learning, both pro and con, it is important to involve them from the beginning and to convince them to support the initiative. In some countries, if they don't support the project, it can be extremely difficult to prevail against them. With the works council you should also discuss the possibilities of evaluation within your company. An evaluation on a personal basis is useful to document an individual's learning progress as well as to define knowledge gaps and to plan and define further support. If it's only possible to agree on an anonymous evaluation, it will produce only limited information and further individual support is hardly possible.

As the Works Constitution Act is very general, the project team and the BI works council had to go into detail and had to get an agreement about the whole concept, including the learning time and evaluation and measurements.

At Boehringer-Ingelheim there is an "Outline Company Agreement on the use of DP systems" dated 17th April 2000. This currently specifies, for example, that no performance analysis relating to any one person can be carried out using IT systems without works council consent.

However, an analysis which retains the anonymity of the individual may be carried out in any form.

Because of these circumstances, the works council was integrated into the project in the middle of 2001, and the council has been involved in several sessions. The works council assisted in setting up a pilot group. This pilot group had been given the task of testing the WBT modules at the preliminary stage from their home workstations. The focus was on technical details, handling and navigation of the WBT.

6. Motivation and communication

The motivation of the project team depends on the responsibility and priority given to them, but at the beginning of a project it will be high. If you want to introduce e-Learning as a new tool in your company you should think about the motivation of the user to use this tool during the training process. The learner's motivation depends on several factors such as level of computer knowledge, previous experience with distance learning, the individual learners' age, and finally the company training culture.

Communication is a key factor at all

stages of the project. This means that frequent project meetings are necessary for updates, discussions and responses to concerns. A weakness of e-Learning (and distance learning in general) could be social isolation and insufficient communication. Therefore in the pre-launch phase you have to think about ways to help the learners feel "connected." Possible answers consistent with blended learning are e-mail, an online forum, or regional meetings.

7. Training concept

One way, possibly the best way, to develop a training concept is to discuss and get agreement with the managers to all points from this Top 10 list. This would be a step forward in the progression toward a "learning organization." Just as you earlier got agreement among the project team members about key points, you should also get agreement with management about the following points in the training concept: Objectives, number of learners, training methods ("e-Learning only" or "blended learning"), evaluation, training materials and media, timeline, budget etc. A very important point to negotiate with man-

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agement is the self-learning time. There should be an agreement whether the time spent on learning will be outside of the normal working hours or during normal working hours. If the latter, clearly define the self-learning time.

8. The right agency or vendor to develop the e-Learning components

There are a lot of vendors that have different technical standards for hardware and software. To find the right agency for your project could be difficult — we found that a standardized questionnaire was helpful. The project team should develop this questionnaire, so that it takes into account the team's responsibilities and perspectives. Our questionnaire (shown in my thesis and available on request) includes 40 points that address various details about the vendors, such as references, samples of their work showing how they handled the "look and feel," interactivity, and navigation. We also asked about their ability to handle evaluation. As e-Learning is the combination of "Electronic" and "Learning" the agency should have deep knowledge in both areas. Both instructional design and didactical design should be familiar terms and they should be able to explain them to you. They should have samples to support any claims they make in these areas. They should be able to support your point of view about the strengths and weakness-

es of WBT and CBT in discussions with management. They should also be able to support you in the launch and post-launch phases. To prepare for the internal discussions it is also worthwhile to make sure that the project team members have an overview and understanding of these questionnaire points in advance of vendor selection. This is another development that could support the company in the process of becoming a learning organization.

9. Developing the storyboard and software development model

There are numerous models for developing the storyboard and software: waterfall, prototype and spiral models are the most familiar. We used the spiral model when developing our WBT. Figure 2, below, is an overview of our e-Learning development process, from setting the learning goals through content development and finally implementation.

To optimize the storyboard individual phases of the development process are repeated several times. Changes and feedback are incorporated dynamically, with regular reviews to ensure the success of the development. The training group at Boehringer-Ingelheim plays a crucial coordination role connecting the input of the various internal departments, our co-promotion partner (CPP) and the vendor.

10. Pilot group

It is essential to start with a pilot group to get experience and feedback. This allows evaluation of the design, the hardware, and the software under "real life" conditions. Pilot group members should include some individuals from the actual learner population, depending on the results of the analysis done earlier, in the second step. You should also invite colleagues with different levels of computer skill and experience in order to get valid assessment of the strengths and weaknesses of the e-Learning product.

As you have seen, managing the pre-launch phase of e-Learning has many aspects. An electronic management system might be helpful to keep an overview and to make the process run smoothly.

As mentioned before, promotion and marketing are essential for a successful implementation of e-Learning within the company. Therefore frequent meetings of the project team are important, as are frequent presentations and discussion with upper management to get further support. The transition from the pre-launch to the launch phase should be planned carefully.

Lessons learned — Managing the launch phase

In general, implementing e-Learning — the actual launch phase — has two dimensions. Implementing the software is the more narrow dimension, while communication about the e-Learning application itself is a task with wider dimensions.

Implementing the software is a technical issue. The pilot group plays a critical part in this and it is important to make sure that you have enough time for this very important stage and to make any necessary changes afterward.

Learners who use the e-Learning application following the pilot will need to be shown how to use it and they will require some motivation as well. What, how and when are very important, and so is timing. The best approach is to use both written text and a "kick-off" meeting. With the written information you can generate interest and curiosity. The kick-off meeting should address the key points of information for the learners, as well as provide some practical experience

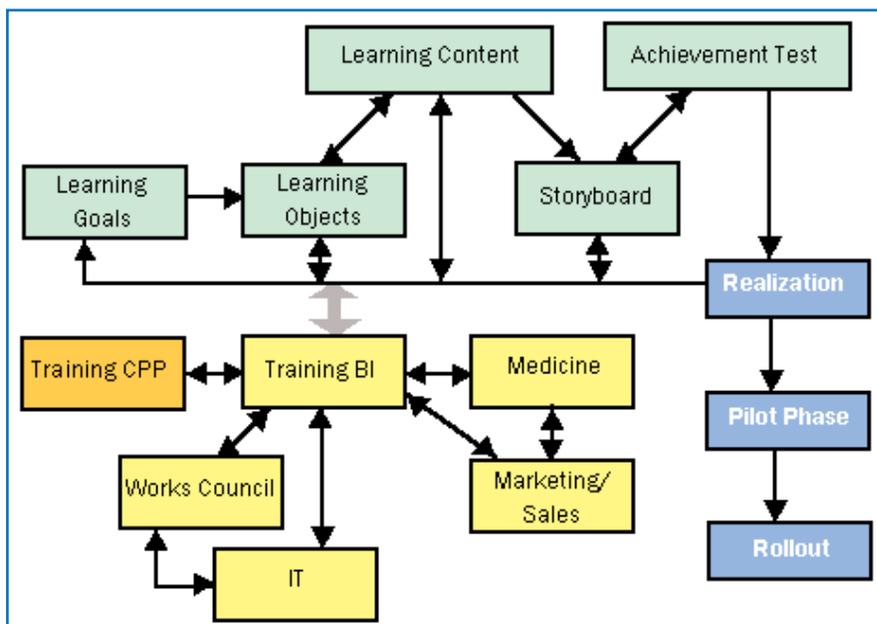


FIGURE 2 Development process of our WBT.

and training with the application itself.

The key points of information include objectives, content overview, how to get access to the e-Learning application and how to start the E-Learning process, how to navigate within it, and learning time and evaluation. It is worthwhile to give an overview of the whole blended learning process and how learners can get answers to questions during the self-study portion of the program.

Support the learning process and the learner

There are several ways to support the learning process and the learner through communication and learning methods and media.

Blended learning, sometimes also called “multi-method learning” or “hybrid learning,” is the combination of e-Learning and learning within workshops or with different learning media. The learner is not committed to a specific learning medium, but can choose the one that is most preferred or effective for him or her. As Werner and Annette Sauter point out, if e-Learning and classical training methods and media are combined to produce an overall effective and useful training program then the blended learning concept is being applied.

Figure 3, at right, provides an overview of the blended learning program and process that we developed in our project.

In the self-study sessions, the learning time was defined as working time. The participants were allowed six half-days over a six-week period between Phases 1 and 3 to learn from the different media. Both traditional written materials (“scripts” in Figure 3) and new media (CD-ROM and WBT) were deliberately developed to ensure optimal integration of all learners into the training process. The learners were free to choose which medium they wanted to use to learn at any stage. In the self-study periods, they could also use an online forum and e-mail to get more information or to ask questions. In the frequent group section meetings it was also possible to discuss the content of the self-study periods. The face-to-face meetings in Phases 2 and 4 were, in general, a day and a half each. The goals of these meetings were repetition of the content, consolidation of the

knowledge, and practical implementation exercises to support transfer to the job — along with discussion and learner motivation. In the final product launch meeting the focus was on communication strategy, selling points, question and answers, and practice.

Evaluation during the self-learning process

Evaluation during the self-learning process depends on the methods and media you are using. The evaluation of the user’s knowledge using the WBT method and an evaluation tool is much easier compared to traditional self-learning methods and CBT. With traditional methods and CBT, you have to develop tests in advance and you have to correct them. This might be difficult to do in the short time period before the next face-to-face meeting. With WBT and an evaluation tool you can get the information quickly and you can evaluate the knowledge level even for a large number of participants. With the information you get you can adapt the goals and contents of the following face-to-face meetings.

Lessons learned — Managing the post-launch phase

After the launch, it is worthwhile to conduct an evaluation by region of interest, or the “qualitative ROI” as we think

of it. All aspects of the e-Learning application, its value, and the users’ perception of the experience should be evaluated. Here are some examples of some questions that we looked into post-launch:

- Does the content of the e-Learning meet the needs of the target audiences?
- Does the site engage learners and motivate them to use it?
- Is the navigation easy?
- Does the design facilitate learning?
- Are the assessments valid, reliable and useful?

Additionally you should consider whether the post-launch evaluation is to be done internally by staff or externally by a consulting organization. There are strengths and weaknesses in both approaches.

The quantitative ROI (Return on investment) also needs to be evaluated. Alan Ellis suggests the formula:

$$ROI(\%) = \text{net training benefits} \times 100\% / \text{training costs.}$$

You may also want to refer to “Doing the Numbers: Return on Investment for e-Learning” by Bill Brandon in the April 14, 2003 issue of **The eLearning Developers’ Journal** for additional ideas about quantitative and qualitative approaches to ROI.

The suspicion of course is that vendors will always put a positive spin on ROI and e-Learning, so it is important for

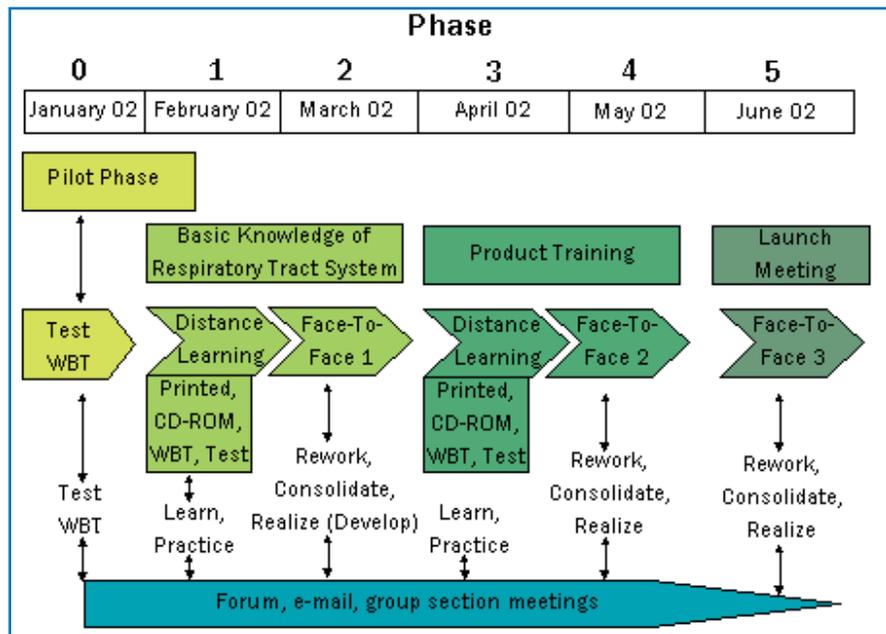


FIGURE 3 Blended learning training concept.

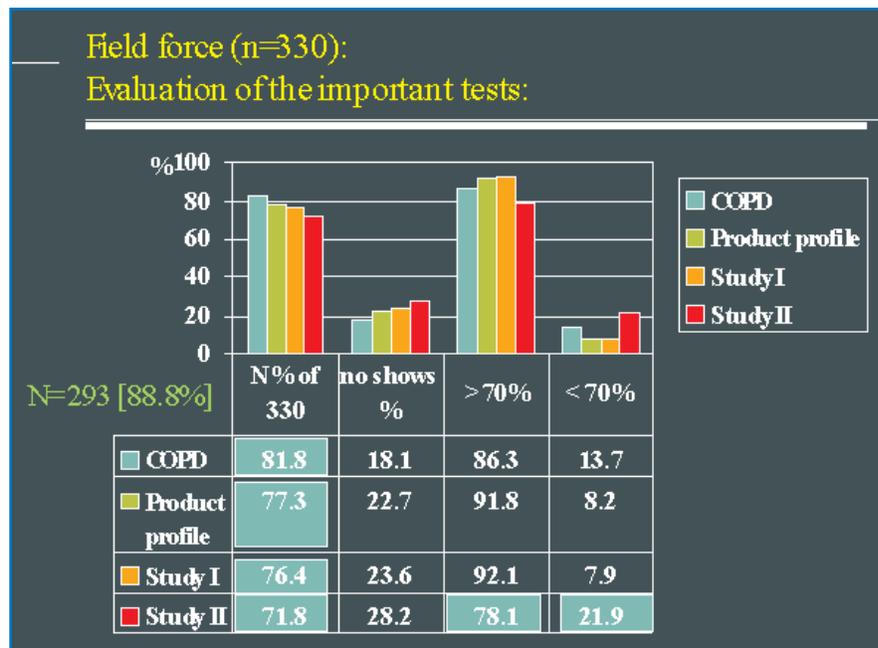


FIGURE 4 Summary of performance on tests during the program

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you to do your own calculations. We found that evaluating the training costs is much easier than evaluating the net training benefits. In the calculation of training costs we considered loss of working hours, overnight stays, trainer days, development costs, IT and online forum cost, etc. In the net training benefits we included reduced future travel expenses, increased sales and productivity, etc. We also suggest appreciating the long-term value of the knowledge of the learners in such a calculation.

Eventually, you must be able to assess and define the value of your e-Learning application for your company. This will help you to determine whether this is the right training pathway and it will help you to sell and promote the training program in your organization.

Taking all variables into account you will get a realistic view. In our calculation, the blended learning solution was 1.5% more expensive than traditional methods alone. However, if the WBT is updated on an annual basis, we can assume a useful life of approximately three years and the calculation looks much more positive. Since we can expand the e-Learning application with new modules, we also began to think about life cycle management issues.

Some vendors offer editing tools that make it possible and cheap to update the content and make small changes in-house. This has an impact in your own calculation about return on investment (costs, own resources etc.). Updating an online e-Learning application (WBT) is in general an advantage, because every user will get the new version immediately.

Summary

One of the most important points we learned is to be realistic with new tools. You should think about the question: Does this new tool fit our learning culture? If you don't have experience with distance learning, especially e-Learning, it is worthwhile to start with a small project to get some experience. Blended learning is a very good solution to integrate and combine your own training experience with new media methods. Additionally, this supports different learning styles. Another point I would like to highlight is that different people with different responsibilities have different per-

spectives, and you have to be aware that these perspectives and priorities sometimes will change over the project lifetime. Therefore communication, power of persuasion, and persistence are very important during this time, as is being aware of general business conditions. This goes in line with promoting e-Learning as a learning process for both the participants and the company, rather than simply as an event.

Here is an overview of the strengths and weaknesses we experienced during the whole training process:

Strengths

- Everybody was involved
- Motivation in the pre-launch phase
- Blended learning concept
- Pre-launch phase
- Launch phase

Weaknesses

- Pilot group (time too short to repair all technical problems)
- Big project and only limited experience in WBT
- Evaluation of the whole training process (questionnaire and usage of the data from the administration tool)
- Post-launch (no concept)
- Responsibilities changed during the project process
- Marketing/Promotion for e-Learning

An evaluation of the knowledge level was done later using the data from the administration tool. This is the first time we did such an evaluation. Figure 4 on page 8 summarizes the results of the criterion tests administered during the program.

About 90% of the 330 field workers in the target population completed all or part of the training. Between 71% to 81% completed the various criterion tests, and the greater part of them (78 to 92%) were successful in passing the criterion level. We note that the most difficult test was Study II; we think that is because the questions were focused on facts and data.

With these results we can say that the knowledge level of the field workers and the area manager about chronic obstructive pulmonary disease and our new drug has substantially improved. The WBT for Germany will be updated on an annual basis and new modules will be developed. We expect to train approximately 120 new field workers within the next three years using this system.

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There are also plans for the international usage of the WBT, which has already been translated into English. The target audience in this case will be new national product managers, product physicians, sales managers and trainers all over the world. This global application will be also a blended learning solution to support different learning styles.

Since bandwidth availability varies widely in different parts of the world, we will create several small pilot groups. Our goal is to evaluate this tool and the technical situations under practical conditions and to establish the best way for the employees within Boehringer-Ingelheim to use it.

The management of e-Learning is multidimensional and somewhat involved. To make it successful you have to invest a lot of time in the pre-launch phase. The more you have invested there, the higher the probability that you will have an efficient and useful application. e-Learning could be "just another event" within your company but ideally it will move the whole learning process toward your company becoming a learning organization. It is important to be realistic and not over-sell the benefits. e-Learning has to fit within the learning structure and culture of your company. 

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Additional information on the topics covered in this article is also listed in the Guild Resource Directory.