

Evaluating e-learning  
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**Abstract:** In this article, the authors explore key high-level evaluation issues, examine several aspects of e-learning evaluation, present a model and explain how it was used in the Canadian military. They also provide the findings and actions taken as a result of the evaluation.

Evaluate. Evaluation. It's no accident that the word value is embedded in the words. Evaluations try to establish the value of objects, service and e-learning courses. Taking an organization into e-learning is a major undertaking. And e-learning can be expensive, upsetting and challenging. It makes sense to establish the value of your move into e-learning. You may have more specific reasons for evaluating e-learning:

Your organization has been using e-learning for a few months and you would like to get a handle on how successful it has been, or not been. You've heard rumors and wish to verify their accuracy.

e-Learning courses replaced conventional classroom classes and you would like to establish the relative costs and benefits of the classroom version compared to the virtual classroom version.

You promised that e-learning would lead to anytime, anywhere training. Now you wish to determine whether it has delivered as promised.

Management bought into e-learning because they were told it is 50% faster, 50% cheaper and 50% more effective. You wonder whether there is any truth to these claims. An evaluation should help to shed some light on the question.

Your organization has had a few e-learning pilot courses and now you are considering developing additional courses. Before you move ahead, it would be a good idea to know what level of success you have had with the pilots. Were they as effective as classroom sessions?

You do things right. You know that evaluations are crucial to performance improvement. You always evaluate. So you will also evaluate e-learning activities. It's expected in your organization.

This article examines ways to measure the value of e-learning, with an eye toward improving it. After an examination of basic evaluation concepts, we will review an example of how the Canadian military measured an e-learning program. We will also see how the evaluation led to recommendations for improvements.

What Is Evaluation?

Evaluation is a discipline where many earn a living and most do this in specialized fields such as accounting, education and general program and project evaluation. However, specialists are just that. Frequently the evaluation that you get is based on the particular model that the evaluators are expert in. So what are the main models of evaluation?

Objective-oriented evaluation: how did we do based on our goals?

Management-oriented evaluation: where do we go next?

Customer-oriented evaluation: What did the program do?

Expertise-oriented evaluation: What do you think we did?

Adversary-oriented evaluation: What's good versus what's bad?

Participant-oriented evaluation: How do we all feel we did?

These are the 6 major types of evaluation. Each addresses the evaluation from a different point of view. The choice is yours. Your organization will need to work with specialists to find the right type or mix of evaluation approaches.

### Issues With Evaluation

The word evaluation sounds definitive. When you hold an evaluation document in your hand, you would like to be able to say with certainty that it is accurate. Is it? How do you know? What can you do to increase confidence in evaluation studies? Table 10.2 lists some of the significant issues about evaluation accuracy along with a few suggestions of what you can do to build a credible evaluation.

#### Issue

Action you can take

How can I be sure that evaluation questions will test what they are supposed to test?

Do a literature search to find a validated questionnaire that has been used for another evaluation. Have your questions reviewed by several people. Pilot the questions with members of the target group.

How will I know if the findings are scientifically valid?

Researchers have developed tests to assess accuracy of results and predict reliability. You can read about tests online and you can hire a professional to develop or to assess your evaluation tools.

Should I take a scientific' approach to evaluation or should I conduct focus groups and do action research'?

Both formal scientific research' and less formal action research' have an important role to play in gathering data. Consider using both. Consider collecting both quantitative data (numbers) and qualitative data (opinions).

How do I locate expert knowledge in evaluation?

Speak to evaluation experts at professional conferences or local colleges and ask them for an estimate about costs to conduct evaluation studies in your area. Ask colleagues in other organizations to refer you to consultants and other resources. There are plenty of resources on the Web. Consult them. If you have questions after reviewing Web resources pose them to an Internet discussion group. Some Web resources are listed at the end of this article.

## How to build a credible evaluation Areas For Evaluating E-learning

The Institute for Higher Education Policy (IHEP) developed an evaluation framework for e-learning that is a useful overview of areas you may wish to consider for e-learning evaluation in your organization. In a review of the literature IHEP identified 45 areas for evaluation or benchmarks and grouped them into seven categories:[1]

Institutional Support environment, policies and technological infrastructure

Course Development development of courseware

Teaching/Learning Process the art of teaching, interactivity, collaboration, and modular learning

Course Structure policies and procedures, course objectives, availability of library resources, types of materials provided to students, response time to students, and student expectations

Student Support student services including admissions, financial aid student training and assistance while using the Internet

Faculty Support activities that assist faculty in teaching online, including policies for faculty transition help as well as continuing assistance throughout the teaching period

Evaluation and Assessment policies and procedures related to assessment and data collection

### Validation Of The Benchmarks

Once the 45 benchmarks were identified from the literature, it was time to validate them against usage by leading institutions. The National Education Association (NEA) and Blackboard Inc., a widely used platform provider for online education, asked The Institute for Higher Education Policy to validate the benchmarks for internet-based distance education. Six institutions participated in the study: Brevard Community College, Regents College, the University of Illinois at Urbana-Champaign, the University of Maryland University College, Utah State University, and Weber State University. To qualify for selection the institutions must have (1) had substantial experience in distance education; (2) been recognized as among the leaders in distance education; (3) been regionally accredited; and (4) offered more than one degree program via online distance learning. To ensure that a broad spectrum of higher education institutions was represented, the study included a community college, a comprehensive institution, a research institution, and a virtual institution.

The 45 proposed benchmarks were rated using two scales: one for importance and one for presence. The results of the study revealed that the 45 benchmarks could be reduced to 24, through reducing some and combining others. The final 24 benchmarks are considered essential to e-learning quality. .

#### 1. Institutional Support Benchmarks

There is a documented technology plan including electronic security measures (i.e., password protection, encryption, back-up systems) and the plan is put into action to ensure both quality standards and the integrity and validity of information.

2. The technology is reliable and as failsafe as possible.
3. A centralized system provides support for building and maintaining the distance education infrastructure.

#### Course Development Benchmarks

4. Course development, design, and delivery are guided by minimum standard guidelines and learning outcomes not the availability of existing technology determine the technology being used to deliver course content.
5. Instructional materials are reviewed periodically to ensure they meet specified standards.
6. Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and program requirements.

#### Teaching/Learning Benchmarks

7. Student interaction with faculty and other students is an essential characteristic and is facilitated through a variety of ways, including voice-mail and/or e-mail.
8. Feedback to student assignments and questions is constructive and provided in a timely manner.
9. Students are instructed in the proper methods of effective research, including assessment of the validity of resources.

#### Course Structure Benchmarks

10. Before starting an online program, students are advised about the program to determine whether they possess the self-motivation and commitment to learn at a distance and have access to the minimal technology required by the course design.
11. Students are provided with supplemental course information that outlines course objectives, concepts, and ideas, and learning outcomes for each course in a clearly written, straightforward statement.
12. Students have access to sufficient library resources that may include a ♦ virtual library ♦ accessible through the World Wide Web.
13. Faculty and students agree upon expectations regarding times for student assignment completion and faculty response.

### Student Support Benchmarks

14. Students receive information about programs, including admission requirements, tuition and fees, books and supplies, technical and proctoring requirements, and student support services.
15. Students are provided with hands-on training and information to aid them in securing material through electronic databases, interlibrary loans, government archives, news services, and other sources.
16. Throughout the duration of the course/program, students have access to technical assistance, including detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the course, and convenient access to technical support staff.
17. Questions directed to student service personnel are answered accurately and quickly, with a structured system in place to address student complaints.

### Faculty Support Benchmarks

18. Technical assistance in course development is available to faculty, who are encouraged to use it.
19. Faculty members are assisted in the transition from classroom teaching to online instruction and are assessed during the process.
20. Instructor training and assistance, including peer mentoring, continues through the progression of the online course.
21. Faculty members are provided with written resources to deal with issues arising from student use of electronically-accessed data.

### Evaluation and Assessment Benchmarks

22. The program's educational effectiveness and teaching/learning process are assessed through an evaluation process that uses several methods and applies specific standards.
23. Data on enrollment, costs, and successful/ innovative uses of technology are used to evaluate program effectiveness.
24. Intended learning outcomes are reviewed regularly to ensure clarity, utility, and

appropriateness.

#### E-learning quality checklist

##### Four Target Groups For E-learning Evaluation

Looking at evaluation from another aspect, we see similar themes and slightly different approaches for learners, instructors, developers and managers. The following table illustrates how different approaches to evaluation might be taken for each of our four groups.

##### Learners' perspective

What attitudes did learners have towards e-learning before, during and after the e-learning activity? What knowledge, skills and attitudes did they acquire during the training? How much did they participate? What was the quality of their participation?

Self-administered questionnaire before, during and after the e-learning activities. Analysis of course participation reports. Focus groups.

##### Instructors' perspective

What attitudes did course instructors have towards e-learning before, during and after the e-learning activity? What knowledge, skills and attitudes did they acquire by conducting the training? How much did they facilitate or dominate the interaction? What was the quality of their instruction?

Self-administered questionnaire before, during and after the e-learning activities. Analysis of course participation reports. Focus groups.

##### Developers' perspective

What attitudes did developers have towards e-learning before, during and after developing e-learning materials? What knowledge, skills and attitudes did they acquire when they developed the training?

Self-administered questionnaire before, during and after the e-learning activities. Focus groups.

##### Managers' perspective

Were the training policies effective? How much did the e-learning program cost? How do e-learning delivery costs compare to conventional costs? Is e-learning anytime, anywhere training? How smooth did the technical delivery of e-learning go? Is e-learning 50% faster, 50% cheaper and 50% more effective?

Review of Web site postings. Individual questionnaire. Focus groups.

#### Four target group evaluation framework

Obviously, there are many, many more evaluation frameworks that may be applied in a particular situation. The example below illustrates one approach adopted by the Canadian military following the approaches listed above.

#### Getting Value For Training In The Military

In the winter and spring of 2001 a team, including the authors of this article, completed a formative evaluation of e-learning in a Canadian military organization. The evaluation dealt with a six week structured leader-led Web-based segment that prepared students for a residential

program in which they learned military management skills. The evaluation was conducted while the course was going on and results were made available to the course developers to make immediate changes.

The key questions addressed in this evaluation were:

Is e-learning an appropriate delivery method for the selected content?

Is the courseware well developed for e-learning delivery?

Is the technology applied for the e-learning component (e.g. WebCT, Internet, laptops, etc.) and the level of support adequate for effective e-learning delivery?

Does the administrative structure and management support enable effective e-learning delivery?

Are the instructors and organizational support staff well prepared to conduct the training through e-learning?

Are participants well prepared and sufficiently well informed to take training using e-learning?

Are participants given all necessary support from their home unit/base?

Do participants find the use of e-learning and learning at home location to be advantageous from a quality of life perspective?

The Evaluation Plan and Information Collected

The evaluators used the CIPP evaluation model of the management-oriented evaluation category. (The acronym is derived from context, input, process, product.) In the CIPP approach, information is collected about:

The context of the training (both before and during the course)

The inputs to the training (e.g. student and instructor preparation for the course)

The process (e.g. student and instructor response to the e-learning environment, study procedures, etc.)

And the product (e.g. student success on exams).

Four data collection methods were used: written questionnaires completed by students and instructors before and after the training; focus groups with students and instructors before, during and at the end of the course; direct observation during the training (monitoring of web discussions, observations during classroom sessions); and document review.

Findings and Conclusions

The evaluation in the military e-learning training program was primarily a qualitative, not a quantitative study. The evaluators were more interested in what people said than in the numbers of people making a particular statement. The number of respondents was small, in a statistical sense. A total of 59 participants participated in the course being evaluated. And just over half of them responded to all of the questionnaires. Focus groups were held with all the instructors, but individual meetings were only held with two. The evaluators had the opportunity to meet with twenty students. These open interviews produced a huge amount of rich information (next table). Students, instructors and course administrators made many valuable suggestions for improving the course. This was the goal of the evaluation as negotiated with the Staff College.

Is e-learning an appropriate delivery method for the selected content?

Yes, it seems to have huge potential. The potential is realized when courses are well designed and instructors are trained in e-learning facilitation.

As the course was an army pilot course additional areas of the curriculum and other courses were selected for conversion to e-learning

Is the courseware well developed for e-learning delivery?

e-Learning requires more design time and some different skills/knowledge to develop materials than classroom instruction. Therefore, an e-learning design and materials development expert with specific expertise e-learning [LS1] should be assigned to assist.

Contracting out of material was undertaken to permit more expert development. Staff was expanded to include training development experts and additional training of staff undertaken.

Is the technology applied for the e-learning component (e.g. WebCT, Internet, laptops, etc.) and the level of support adequate for effective e-learning delivery?

The technology worked well, except some problems were experienced with downloads.

Decision was taken to continue with proven technology

Reduction of download bottlenecks is main goal

Does the administrative structure and management support enable effective e-learning delivery?

Administrative roles were new and people fulfilling them were learning as they went. Training should be offered to people fulfilling the administrative roles.

Decisions to maintain stability of staff to permit stable development.

Establishment of training and support backup personnel

Are the instructors and organizational support staff well prepared to conduct the training through e-learning?

No. Both require specific training in their new tasks and roles. Using technology rather than meeting f2f in a classroom demanded a significant adjustment

With back to back courses this was difficult to achieve.

Short lessons before course (2-3 days) and in progress session assisted

Are participants well prepared and sufficiently well informed to take training using e-learning?

No. Participants were missing some of the basic skills such as how to use Adobe Acrobat Reader and some did not have the basic knowledge and confidence to teach themselves.

Additional orientation materials have been developed.

Customer population is adjusting to an e-learning environment, with the help of graduates of the first course.

Are participants given all necessary support from their home unit/base?

Home units and military bases were supportive.

Dedicated learning centers are being created for future courses.

Do participants find the use of e-learning and learning at home location to be advantageous from a quality of life perspective?

Some did prefer to study at home. Others found that using e-learning required them to use the family telephone line when other family members wanted to use it.

Less need to be on line to download has made this less of an issue.

## Evaluation findings and actions taken

### Conclusion

Evaluation is fundamental to grasping the value of an e-learning program. Evaluation is fundamental to pinpointing ways to improve an e-learning program. You have access to a wide variety of e-learning evaluation models. They vary according to what counts in an organization and the budget assigned to evaluation. Armed with the information in this article you will have a better idea of the central evaluation issues and you will be able to work more closely with evaluation specialists to generate a successful e-learning evaluation.

### Resources For More Information About Evaluation

The Web abounds in resources for evaluation and there are some e-learning specific resources. The following table illustrates some of these sources of information about evaluation. This list can help get you started. A few Web searches will no doubt lead you to other resources.

### Source of information

Criteria used by the Brandon-Hall Awards to evaluate Web sites

<http://www.brandonhall.com/public/faqs2/index.htm>

Article about evaluating e-learning from ASTD's Learning Circuits

[http://www.astd.org/virtual\\_community/research/What\\_Works/e-learning/e-learning\\_main.html](http://www.astd.org/virtual_community/research/What_Works/e-learning/e-learning_main.html)

Sample questions for e-learning evaluations from The National Education Association (NEA) and Blackboard Inc.

<http://www.ihep.com/Projects.php?parm=Projects/Blackboard.html>

### Table 10.9 Sample evaluation resources on the Web

A text that is very useful if you wish to learn more about the theory of evaluation and the process of negotiating and codes of behavior for evaluators is Program Evaluation ♦Forms and Approaches by John M. Owen: Sage Publications London 1999

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[1]The Institute for Higher Education Policy, Quality on the Line: Benchmarks for Success in Internet-Based Distance Education, April 2000 <http://www.ihep.com/quality.pdf>