Evaluation in E-learning: Case of IRAN

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Abstract: In this paper, we describe about e- learning evaluation. In the first, a review of literature and clearing evaluation means are done and then describe about differences between e-learning and traditional instruction. Some approaches for evaluation orientations are proposed. Evaluation concept and difference between measurement, assessment and evaluation of e-learning become subsequent. In follow we explain about purpose and goal evaluation and then talk about evaluation criteria. Evaluation criteria are including navigation, screen design, instruction structure, content, interactivity and applicability. In the conclusion we discuss about heuristic evaluation.
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Introduction

The challenge of evaluation in distance education can be both a complex and confusing enterprise. Most of us would like to merely get on with it, do an evaluation of our distance education program, and not spend an inordinate amount of time defining evaluation terms, clarifying evaluation concepts, and being confused with semantic differences that are apparent whenever the topic of evaluation is presented. However, the truth is that we must work our way through all of the terms, concepts and semantic differences if we are ever to move to the point of being able to construct and implement meaningful evaluation in distance education. The good news is that once we understand the "playing field" of evaluation our evaluation practice becomes a rather simple task instead of a daunting challenge.
A major challenge of evaluation in distance education emanates from the very distance that exists between the learner and the teacher. This distance creates a situation whereby the control of the teacher is reduced and the control of the learner is increased. And, of course, as the teacher's control is reduced so is the teacher's ability to completely control the design and implementation of evaluation strategies. It is imperative that the educator in distance education explore evaluation strategies that provide for increased ways in which the learner can exercise control for the purpose of individual growth and development. Without such recognition of the enhanced role played by the learner in distance education, evaluation runs the risk of becoming a meaningless exercise that yields little valuable information. Input from the learner into the evaluative process is essential in a well designed distance education program. (Levine, 2002)

A Review of Definitions

Economic, social and technological forces continue to change the global economy, and the way of life in organizations and the world. In specific, these forces have and continue to revolutionize teaching and learning in organizations. Urdan and Weggen (2000) related that technology, the rapid obsolescence of knowledge and training, the need for just-in-time training delivery, and the search for cost-effective ways to meet learning needs of a globally distributed workforce have redefined the processes that underlie design, development and delivery of training and education in the workplace. In addition, Urdan and Weggen related that the need for different learning models due to skills gap and demographic changes and demand for flexible access of life-long learning have played upon teaching and learning. In this teaching and learning evolution, however, several terms have been attached to characterize the innovation and creation that has been occurring. Some terms are: e-learning, distributed learning, online learning, web-based learning and distance learning. The purpose of this section are review and summarize definitions related to e-learning. Zahm (2000) described computer-based training (CBT) as usually delivered via CD-ROM or as a Web download and that it is usually multimedia-based training. Karon (2000) discussed the convenience factor of well-designed computer-based training by saying that any well-designed computer-based training- whether it's networked based or delivered via the Internet is more convenient than traditional instructor-led training or seminars. Karon went on to say that self-paced CBT courses are available when learners are ready to take them, not just when the

seminar is scheduled or the instructor is available. Hall (1997) incorporated both Zahm (2000) and Karon (2000) definitions by underlining computer-based training as an all-encompassing term used to describe any computer-delivered training including CD-ROM and World Wide Web. Hall further explained that some people use the term CBT to refer only to old-time, text-only training. Like CBT, online training was classified as an all encompassing term that refers to all training done with a computer over a network, including a company's intranet, the company's local area network, and the internet (Gotschall, 2000). Gotschall supplemented that online training is also known as net-based training. Urdan and Weggen (2000), related that online learning constitutes just one part of e-learning and describes learning via internet, intranet and extranet. They added that levels of sophistication of online learning vary. It can extend from a basic online learning program that includes text and graphics of the course, exercises, testing, and record keeping, such as test scores and bookmarks to a sophisticated online learning program. Sophistication would include animations, simulations, audio and video sequences peer and expert discussion groups, online mentoring, links to materials on corporate intranet or the web, and communications with corporate education records. Schreiber and Berge (1998) agreed with Gotschall (2000) and purported that online learning is any technology-based learning, that is, information currently available for direct access. They added that this usually implies linkage to a computer given the broad definition of online training; it would seem safe to assume that web-based training is online training. Hall (1997) defined web-based training as instruction that is delivered over the Internet or over a company's intranet. Accessibility of this training, related Hall, is through the use of a web-browser such as Netscape Navigator. Hall and Snider (2000) defined learning as the process of learning via computers over the Internet and intranets. Hall and Snider extended that e-learning is also referred to as web-based training, online training, distributed learning or technology for learning. Distance learning, however, was not included in the e-learning definition and was defined as its own entity as a learning process meeting three criteria: a geographical distance separates communication between the trainer and participant; the communication is two way and interactive; and some form technology is used to facilitate the learning process. Hall (2000) contends that e-learning will take the form of complete courses, access to content for "just-in-time" learning, access to components, a la carte courses and services, and the separation of "courses" to acquire and test knowledge vs. content as an immediate, applicable resource to resolve an immediate, perhaps, one time only problem. Learning is and will continue to be a lifelong process, that could be accessed anywhere at anytime to meet a specific need or want. Hall added that more links to real-time data and research would become readily available. Given the progression of the definitions, then, web-based training, online learning, e-learning, distributed learning, internet-based learning and net-based learning all speak of each other (Hall and Snider, 2000; Urdan and Weggen, 2000). Similar also to e-learning and its related terms is technology-based learning (Urdan and Weggen 2000). Urdan and Weggen shared that e-learning covers a wide set of applications and processes, including computer-based learning, web-based learning, virtual classrooms, and digital collaborations. For the purpose of their report, they further customized their definition to the delivery of content via all electronic media, including the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM. They warned, however, that e-learning is defined more narrowly than distance learning, which would include text-based learning and courses conducted via written correspondence. Like Hall and Snider 2000), Urdan and Weggen (2000) have set apart distance learning and e-learning in their glossaries, making, however, e-learning inclusive and synonymous to all computer-related applications, tools and processes that have been strategically aligned to value-added learning and teaching processes. Berge (1998) explained the difference between distance education and distance learning. Distance education was seen as the formal process of distance learning, with information being broad in scope, for example, college courses. While, distance learning was seen as the acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance. This may be why most educational institutions used the term distance education. In reviewing five institutional definitions of distance education, these were the main tenets: historically, it meant correspondence education; it is planned teaching and learning, Connects learners at a distance, designed to encourage learner interaction, uses audio, video and computer technologies as delivery modes, delivery modes evolve as technology expands and grows. Gotschall (2000) described distance learning as a broadcast of lectures to distant locations, usually through video presentations. Hall and Snider (2000), as mentioned above, characterized distance learning with three criteria; they are: a geographical distance separates communication between the trainer and the participant; the

communication is two ways and interactive, and some form of technology is used to facilitate the learning process. Willis (1994) in his definition of distance learning identified the acquisition of knowledge and skills as another criterion and supported the former three criteria by saying that distance learning occurred through mediated information and instruction, and encompassed all technologies and other forms of learning at a distance. Porter (1997) shared that distance learning was education or training offered to learners who are in a different location than the source or provider of instruction. Porter went on to say that the technologies used in distance learning, the structure of a course or program, and the degree of supervision for a distance learning course can be varied to meet a particular's group's needs or interests. Reverting to Halls (2000) contention of e-learning in all-inclusive form, distance learning as planned interactive courses, as the acquisition of knowledge and skills at a distance through various technological mediums would seem to be one of e-learning possible disguises. Interestingly, Urdan and Weggen (2000) saw e-learning as a subset of distance learning, online learning a subset of e-learning and computer-based learning as a subset of online learning. Given the review of definitions on all these terms 'subset' does not appear to be the most likely word to describe the relationship among these words and their forms. The definitions show a great depth of interdependence among themselves. While one person may narrowly define a term, another person could give it the all encompassing power. This communicates that e-learning, if given the all encompassing form, can be the larger circle of which all other terms would be overlapping at different times and extents given their user's intention. Another rationale for this choice is that "just-in-time" learning is a major advantage of e-learning but not of distance learning. Distance learning purports planned courses, or planned experiences. E-learning does not only value planned learning but also recognizes the value of the unplanned and the self-directedness of the learner to maximize incidental learning to improve performance .(Wentling, 2003)

Differences between e-Learning and Traditional Instruction Based on Bates (1996)

Pointed out that "the potential for developing higher order skills relevant to a knowledge-based society is a key driver in developing computer-based distance education courses" Examining how learners engage higher order thinking is the topic of a recent research study at Massey University in New Zealand. White (1998) examined strategies of 420 foreign language learners at the university. White reports that distance learners made greater use of met cognitive strategies – what individuals know about their own thinking – compared to classroom learners, most notably with regard to the strategies of self-management and advance organization and, to a lesser extent, revision. A comprehensive research bibliography on e-learning has received much attention. Compiled by T. L. Whalen (1999), The No Significance Difference Phenomenon may provide one of the most quoted rationales for the power of e-learning. This body of research demonstrates no significant difference no matter what media you use for learning. In many of these studies, the model is asynchronous learning delivered to the learner on demand. The findings demonstrate that even with no instructor or face-to-face interaction, there are no significant differences in the amount of content learned. A related website includes extracts from more than 355 research reports, summaries and papers supporting the No Significant Difference phenomenon. This is one time that a finding of no significant differences is actually a compelling advantage. If corporations can get all of the advantages of e-learning with the same level of results as an instructor-led classroom situation, the economic element becomes even stronger. The research results continue to improve for e-learning in general. Nettles, et al., (1999) report that, while the majority of the 49 studies they examined reported no significant difference between e-learning and traditional classroom education, "nearly 30% of the studies report favorable outcomes based on student preference, better grades, cost-effectiveness, and greater homework completion." An alternate website features comparative studies that do show significant differences, most of which report positive results. For example, Maki, et al., (2000) evaluated a Web-based Psychology course and reported that content knowledge, use of the WWW, and use of computers for academic purposes increased while computer anxiety decreased. Navarro and Whalen (1999) reported that Cyber learners performed significantly better than Traditional Learners. In a study of corporate learners, Redding and Whalen (1999) report that "the online group is the most successful at cognitive learning as measured by the end of course examinations. The results of the study do provide strong support for the conclusion that online instruction for individuals entering the insurance field is highly effective, and can be more effective than traditional classroom delivered instruction. (Strother, 2003)

Evaluation approaches

The evaluation approaches are as follows.

1. Formative Evaluation: Focuses on improving the online learning experience.2. Summative Evaluation: Focuses on the overall success of the OL experience (should it be continued?).
3. CIPP Model Evaluation: Framework of Context, Input, Process, and Product.
4. Objectives-Oriented Evaluation: Examines OL training objectives as compared to training results
5. Marshall & Shriver's 5 Levels of Evaluation: Self, Course Materials, Course Curriculum, Course Modules, Learning Transfer
6. Kirkpatrick's 4 Levels: Reaction, learning, behavior, results.
7. Return on Investment (ROI): A fifth level of the model (though Kirkpatrick does not agree), which relates to e-learning investment impacting company bottom line. According to Phillips, it compares benefits to the costs.
8. Kirkpatrick Level 6 (somewhat fictional): Relates to the budget and stability of the e-learning team.
9. Kirkpatrick Level 7 (somewhat fictional): Relates to whether the e-learning sponsor(s) or champion(s) are promoted in the organization. 10. Cost/Benefit Analysis (CBA): Do the costs outweigh the benefits?11. Time to Competency: Does e-learning quicken employee training.
12. Time to Market: How e-learning speeds up the training of sales and technical support personnel?
13. Return on Expectation: Does e-learning meet the expectations of one's job?14. AEIOU: Accountability, Effectiveness, Impact, Organizational Context, U = Unintended Consequences
15. Consumer-Oriented Evaluation: Uses a consumer point-of-view for evaluation.

Differentiating Between Measurement, Assessment, and Evaluation

Evaluation consists of the merging of two very powerful ideas - the comparing of two sets of information and the placement of value on this comparison. For instance we may have data that describes the learning outcomes of a face-to-face instructional program. When these data are compared with similar data drawn from a distance education program we are on the road toward evaluation. First, though, we are faced with an assessment -comparing two sets of information.
Next, when we assign a value to this assessment, we have arrived at evaluation.

But why in the world would someone want to stop at assessment, the comparing of two sets of information, when turning it into an evaluation could easily be achieved by just adding a statement of value to the comparison? The answer, of course, is politics and risk. The minute we place a value on the comparison we are opening ourselves to risk. What if the learning outcomes of a face-to-face instructional program are greater than those of a distance education program? We might want to merely state those facts (assessment) or go on to say that the face-to-face program was better (evaluation).

Evaluation of E-learning

In the past few years there have been measurement renaissances for all corporate staff functions, including the human resource and training and development functions (Hackett, 1997). Chief executives are increasingly concerned with the impact of training on the bottom line (Phillips, 1997). Training is no longer viewed as simply a cost associated with doing business. Organizational leaders want to now how training is impacting organizational effectiveness and competitive position. According to Holton (1995) pressure is being placed on HRD and training departments to demonstrate that interventions and programs are contributing to "the bottom line" of the organization. In order to determine training value, training professionals must provide evidence that the expenses associated with designing, developing, and delivering a given training program will add value to the organization. In many organizations, evaluation is identified as the most appropriate method for demonstrating how training adds value (Preskill, 1997). The impetus for measuring the value of training has primarily been reactive measures. Some organizations have reacted to reengineering and downsizing efforts; while others have needed to measure improvements from radical new processes (Hackett, 1997). There is also a movement toward a proactive measure of intellectual capital as a non-financial asset and training and development is a key component in measuring intellectual capital (Hackett, 1997). Finally, in many organizations the status of the training and development function has been heightened in recent years. For many, training has become an integral part of competitive strategy. This enhanced visibility requires more accountability; hence organizations have increased efforts to measure and evaluate the success of training (Phillips, 1997). As a result of the above-mentioned forces, evaluation of training and development programs and interventions are, among

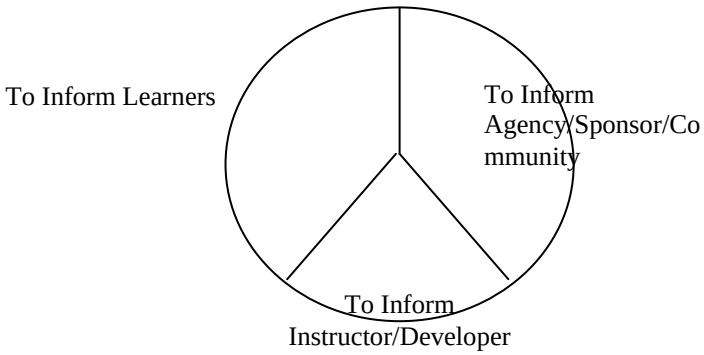
others, the most critical issues facing training professionals today.

Organizations use a variety of methodologies to evaluate training programs. The methodology should be driven by the purpose of the evaluation. There can be multiple reasons to evaluate a training program. Phillips (1997) outlines ten broad purposes and uses of evaluation: To determine the success in accomplishing program objectives. To identify the strengths and weaknesses in the HRD process. To compare the costs to the benefits of an HRD program. • To decide who should participate in future programs. To test the clarity and validity of tests, cases, and exercises. To identify which participants were the most successful with the program. To reinforce major points made to the participant. • To gather data to assist in marketing future programs. To determine if the program was the appropriate solution for the specific need. To establish a database that can assist management in making decisions. One of the most common training evaluation approaches is the Kirkpatrick model, which was first established in 1959. Kirkpatrick's model is a four level process used to determine the effectiveness of training in order to improve future programs and to eliminate programs that are ineffective. In a study of training and HR executives of Business Week's 1,000 companies, 51 percent of respondents indicated that their organization used the Kirkpatrick evaluation model (Hackett, 1997). Kirkpatrick (1996) defined the four levels of evaluation as follows: Level 1 evaluation, Reaction, involves measuring how participants react to or feel about a training program. This is basically a measure of customer satisfaction. "Smile sheets" provided at the conclusion of a training event are an example of evaluation at the reaction level. Level 2 evaluation, learning, measures the extent to which participants' knowledge, skills, and attitudes change as a result of training. The use of pre and post tests to measure learning is an example of a level two evaluation design. Level 3 evaluation, Behavior, examines the extent to which change in behavior has occurred because of attending a training program. In essence this level attempts to measure on-the-job changes in performance resulting from training. Using a control group in order to assess behaviors prior to and following completion of training is one of the best ways to gather data at this level. Finally, Level 4, Results, can be defined as the final results that occurred because employees attended the training program. Results may include increased production, decreased costs, improved quality, reduced turnover, higher profits and return on investment. As the level of evaluation increases so does the difficulty and costs associated with the evaluation. While Kirkpatrick's model is commonly accepted by trainers it is rarely fully implemented and its applicability in today's organizations is increasingly questioned (Holton, 1995; Hackett, 1997). As organizations rethink the role of training, they are also rethinking how to evaluate training. Methods used to measure training effectiveness are changing to meet a workplace where learning has become an integral part of daily work activities (Hackett, 1997).

Considering the Purpose or Use of an Evaluation

A large trap that many evaluators (assessors or measurers) fall into is assuming that one type of evaluation can fit a myriad of uses. For instance, the data that have been collected to help an instructor understand how to make improvements the next time the course is taught is made the focus of a report to the sponsoring agency. Or, an exercise to help learner's better under stand how to improve their own discipline for learning at a distance is used to identify weak points in as an elite delivered program. Each of these cases suffers from the inappropriate use of an evaluation to fulfill a secondary purpose. (Levine, 2002)

Three Major Recipients of Evaluation Results



Evaluation Criteria

With in creasing growth in size and complexity in e-learning Implements, the demand on the underlying technology is becoming more rigorous. This involves new ways to access, learn/teach and prepare learning materials .For an e-learning/e-teaching tool to be appreciated, there is need to find out whether the technology infrastructure has the capacity to support the users and network load, or scalable enough to support growth. It must also be stable to ensure high availability to learner sand support connectivity between components. A good guide to evaluating any

e-learning material is to have a clear description of the learning needs. With this in mind, one can assess the ability of the inherent technology to address these needs. Some useful-learning evaluation criteria included.

Navigation

The ease with which learner search, and the ability to find way with in the learning package. This take into account the progress indication within course material, the necessary forward, backward option choices such as to skip ahead and go backwards to previously covered material, Bookmark functionalities, menu or modules of course progress completion.

Screen Design (format, layout, appearance)

This includes full screen presentation, good use of different fonts and colored text with few colors that work well. The availability of graphics and visual style that enhance learning, sounds and animation options as well as simple and clear images and objects where necessary.

Instructional Structure

E-learning materials must relate to the reading level, depth and experience of the target learner. It should include an introduction on the subject to be learned and its importance in the learning process.

Content/substance

Evaluating content involve address how the learning information is uniquely created, accurate, meaningful, comprehensive, current, easy to edit, update and maintain.

Interactivity

This criteria focus on user participation in the learning process through interactive examples. Interaction is based on the knowledge and skill of the learner. The type of interaction may include simulations, free response, executing inherent software applications, drag and drop, etc.

Applicability

Applicability for e-learning evaluation involves how applicable the instructional content is to the specific need and situation the learner faces. It looks for a strong connection between the course content and the benefit of learners from the learning process. (Phillips, 2003)

Objectives and Student Learning Outcomes

The instructor must establish objectives and student learning outcomes that reflect not just the content of the course but also the e-learning mode of instruction (Buzzetto-More & Alade, 2006). They must be communicated in a manner that that is clear and measurable. These must be identified in advance of creating the course and must be communicated directly to learners. To help assist faculty in the development of student learning outcomes it is recommended that Bloom's Taxonomy of Educational Objectives is used to help guide the phrasing which provides a recognized set of hierarchical behaviors that can be measured as part of an assessment plan (Harich, Fraser, and Nor by, 2005). The six levels of Bloom's Taxonomy relate to cognitive growth and in ascending order include: knowledge, comprehension, application, analysis, synthesis, and evaluation (Buzzetto-More, 2006).and (Alex, 2006)

Choosing an E-Learning Evaluator: A Checklist

A useful checklist for this purpose is developed as follows.

- Is the evaluating agency ISO registered?
- Is the evaluating agency funded by a private company or government department? Will that affect the goals, objectives, or potential bias inherent in the resource evaluation?
- Does the evaluator ensure adherence to the curriculum standards in my region?
- Does the evaluator specialize in the evaluation of e-learning resources?
- Does the evaluator go through a detailed analysis of the e-learning resource?
- Does the evaluator assess the resource for curriculum correlation? Bias and inclusiveness? Content and quality of information? Methodology, including learning strategies, thinking skills and problem-solving opportunities? Assessment? Format and design, organization, interactivity, user-friendliness, and medium suitability?

Conclusion

In this paper, we describe about Evaluation approaches. In Iran e- Learning is new and so there is any evaluation approach and models.
Regarding to vision (IRAN-1404) development plans and Education document that we develop a model approach and model for e-learning evaluation in Iran, on the other hand there are theoretical approaches of e-learning evaluation.
Thus we suggest evaluation by objective (EBO) approach. In this approach the first e-learning objectives clearing then we evaluate the e-learning objective by model (developed model)

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