

Using Technologies to Improve E-Learning

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Abstract

E-learning has the potential to significantly augment the traditional learning paradigm. However, despite the significant progress that has been made to date for its adoption, it still suffers from boring and ineffective contents. In this article, I will examine how media technologies and Web 2.0 technologies may help improve effectiveness of e-learning.

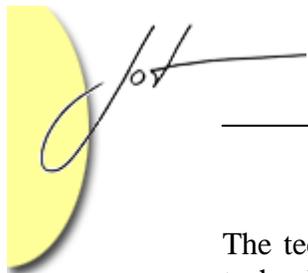
1 INTRODUCTION

During the past decade e-learning has made steady progress in its adoption in corporate training programs, for-credit courses in educational institutes, and continuing education programs. Many learning management systems, both commercial and open source, are available. There is a variety of types of e-learning [1], ranging from videos of instructors delivering instructions – overlaid with PowerPoint pages, to people watching CDs on their computers or browsing the Web for materials on specific topics of interest.

However, pure e-learning has limitations. Depending on the types of e-learning and how the e-learning programs are designed, these include the absence of an instructor, poorly created contents (course materials, exercises, and exams), boring contents, and the absence of a deadline pressure. These result in lower learning efficiency and lower learner engagement relative to traditional instructor-led in-class learning. This has led to blended (or hybrid) learning which combines e-learning components and instructor-led in-class learning components to round out a learning program or learning curriculum. However, insofar as blended learning includes e-learning components, the limitations of e-learning still pose a problem.

The limitations of e-learning can be addressed using pedagogical techniques and technologies [2]. In the remainder of this article, I will discuss the use of technologies in improving the learning efficiency and learner engagement in e-learning.

2 USE OF TECHNOLOGIES



The technologies that are available and widely used today may be grouped as “media” technologies and “Web 2.0” technologies, for the purpose of their application to e-learning. In this section, I will discuss the use of each type of technologies.

2.1 media technologies

There is an array of media technologies that can and must be used to make e-learning effective. They include simple visual aids (graphs, charts, tables, etc. that are created using software tools), audio, music, images, graphics, motion graphics (animation), video, simulations and demos (created using software tools), interactivity mechanisms, etc.

The media technologies can help e-learning in one or two important ways. One is to help the learner understand complex concepts or complex details that, when expressed only in words, are difficult to comprehend. As the saying goes, “a picture is worth a thousand words,” and visual aids, images, graphics, screen captures, motion graphics, video, and simulations and demos can, if used properly, significantly help the e-learners.

Another is to help engage the learners by breaking monotony or challenging them intellectually. The use of the media technologies mentioned above, by their nature, help engage the e-learners by breaking monotony. Simulators/emulators and demos can be a significant help to the e-learners. Depending on the sophistication of the tools used to create the simulators and demos, the e-learners may get to watch how certain things (a mechanical device or software) work, or get to experiment with them. There are relatively inexpensive tools (screen recorders) for creating demos, such as Camtasia Studio, ViewletBuilder, RoboDemo, etc. Microsoft’s Excel also may be used to allow the e-learners to experiment with what-if scenarios.

Besides such media technologies, there are interactivity mechanisms (such as mouse rollover images, hot zones, drag and drop) and musical leitmotifs that can help engage the e-learners.

[4] makes a case for using music or sound effects as background to the textual contents in e-learning. Musical theme, called leitmotif, may be defined for each of a few key situations or characters in the text contents, and may be played in the background. For example, in a customer service training course, a different leitmotif can be associated with a different type of customer: a playful theme for the inquisitive customer, an ominous theme for the angry customer, a rushed theme for the demanding customer, a happy theme for the satisfied customer. This is akin to the use of leitmotif in movies or even video games. Just imagine watching, for example, the chariot race scene in Ben Hur, or playing a video game, with no background music or sound effects! There are very few movie and game scenes without leitmotifs.

A few comments are in order here. First, when the media technologies are used to supplement the main body of the e-learning contents, the media technologies must not introduce any new difficulties. The new difficulties include usability issues and disconnect with the main body of the e-learning contents. For example, a graph that is

6. saving contents in blogs or save lists

The visitors may send e-learning contents of their choice to their personal blogs, or save them in their personal save lists for future browsing or communication with friends.

Some of the above features as they manifest themselves in today's social networking and object sharing sites are not appropriate for use in e-learning, and must be modified for e-learning. This is discussed below.

1. categorization

The categories supported by today's social networking and object sharing sites are very simplistic. For use in e-learning, the categories need to be expanded, possibly to 3 or even 4 levels deep, to encompass most subjects relevant to e-learning courses and subjects offered. Wikipedia offers a rather formidable-looking categorization of all subjects on which there are articles. In my view, something around the mid-point between the Wikipedia's categories and the YouTube categories ought to be suitable for e-learning.

2. search

The keyword-based search should be tuned for the subjects relevant to e-learning courses and subjects offered. Further, it may best be made to work in the context of the categories for better results. For example, if the visitor can specify "business" as category, and "i-phone" as subject, the search result should return only articles about i-phone business, and not those about i-phone technology.

3. personal profiles

The personal profiles should include specific "subject expertise" information, rather than just the person's hobbies. The subject expertise information may include the titles of the courses he/she has taken, the subject areas in which he/she may be willing to communicate with and help others.

4. I would like to close with one remark that I consider important. In my view, today's social networking and object sharing sites are designed to keep the visitors for long periods of time. To this end, these sites have a few important features. One is what I would call "group chaining." Some of the sites (e.g., Facebook) throw each new member into an existing group (based on his/her school, employer, residential region), and he/she is allowed to browse through members of other groups. Another is what I would call "object chaining." Some of the sites (e.g., Digg, YouTube), when a visitor views a particular object, suggest a number of related objects to view also. In this way, if a visitor wants to, he/she may click through a huge number of members of different groups or objects that have nothing to do with his/her initial interest, and spend (and waste) a lot of time on the sites. I think e-learning sites should not have such features.



3 CONCLUDING REMARKS

Although the focus of this article was on the use of technologies for improving the effectiveness of e-learning, I believe we must never forget that the foremost objective of e-learning is “learning,” not demonstrating technologies. As such, I feel this article would not be complete if no mention is made of the pedagogical techniques that are essential in laying the basis for e-learning. In my view, the use of technologies is a layer that sits on top of this basis. The pedagogical techniques discussed in [1] are summarized below.

1. disciplined use of standard techniques and considerations for creating and upgrading course contents (structuring, flow through the structure, use of examples and exercises, step-wise refinement of the presentation of key concepts, consistent use of a good presentation style, elimination of errors and inconsistencies).
2. use of themes and analogies in presenting certain key concepts
3. game-based challenges in exercises
4. creation and management of customized course contents (different choices of media, such as audio, text, and video; and different depth and scope), and
5. disciplined use of a lifecycle process for creating and upgrading the course contents [3].

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