CONTENT DEVELOPMENT: The Difference It Offers To Learning Effectiveness

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Abstract

eLearning has been predicted to be the way forward. Any organization that does not subscribe to this new way of learning may even perish. However, the trend does not seem to be so although more and more organizations conduct eLearning. When we reflect on the different modes of eLearning it seems clear that content of any educational product is the most important component for effective eLearning. It will certainly help the learners to acquire the guided and proper knowledge of any subject. Without the content, the learners would tend to be distracted by all sorts of information that may or may not be relevant to the subject of his study. We therefore need to ensure that the content would assist the student learn what he needs to and leads him towards learning more.

This paper purports to outline how best the content should be developed to achieve the objectives of the learner. This involves the established learning theories that are available in the literature. Secondly, it would also discuss the various forms of content that could be developed in the face of different eLearning environments.

Thirdly, this paper would also attempt to share the experience UNITAR had gone through its six years of conducting eLearning and developing the contents.

1. Introduction

eLearning is supposed to be the way forward in this age of information and communications technology advancement. It is becoming increasingly popular in both the corporate and academic worlds. A few years ago, the CEO of Cisco predicted that eLearning will be a very big business that could amount to at least USD2 billions. Peter Drucker, in mid 1990's, predicted that the conventional universities like Harvard and Yale would perish in about 25 years, unless they convert into eLearning.

However, much of the predictions have not come true. eLearning has not made as much inroads neither in the corporate nor in the academic world. The question is what has gone wrong? Most likely the basis by which predictions were made were not sound enough.

It could also be probable that eLearning have not been effective enough, or the infrastructure is not sufficiently ready to make eLearning easily and readily accessible.

2. What is eLearning?

eLearning itself has as many meanings

as there are initiators today. It varies from one that has a small electronic component in the total learning process to one that conducts everything through the pervasive use of technology. Of course such varied meanings would give rise to several eLearning models that are available today. You have the blended model which combines the face-to-face and technology mediated learning.

Similarly, different eLearning models have different combinations of various components that support learning.

What seems to be more popular is the short corporate training courses that are being used for in-house training, replacing the normal face-to-face corporate training. This is mainly because it provides significant flexibility requiring less class hours and more learning at employees' own time. It becomes cheaper to some extent. The system can also trace the participation rate of employees. Employers are quite confident of the high level of uniformity in the subject matter learned.

eLearning in the academic world has not expanded fast enough. Although there are more than a dozen universities that adopted eLearning, not all of them adopt it 100 percent. Some even have two modes of delivery, the eLearning part as well as the conventional part. Some universities venture into eLearning on a project, program or course basis. E.g. University of Liverpool conducts only its MBA program online. In short, Peter Drucker's prediction about a decade ago that the conventional universities will perish does not seem to be true. We know that there are many new conventional universities that are being established in different parts of the world.

3. What is the most common component in the various eLearning environments?

Quite clearly, the most common component of the various eLearning environments is the content. This is true in both the corporate training as well as the academic environment. Indeed it is true whether the eLearning is conducted in primary, secondary or even tertiary levels of education. It is also true whether eLearning is only a small proportion of the total learning delivery process or when it forms 100 percent of the eLearning delivery process.

The subject content seems to be the most important component in any eLearning delivery process. This probably is due to the fact that eLearning is thought to be a form of distance learning. We also know that distance and open learning has always given special emphasis on content. The modules developed by Open Universities are certainly of high quality which incorporates loads of learning theories in the process of development. Such well developed modules are thought to be pertinent to assist independent and self-learners effectively learn.

When conceptualizing eLearning, it is more likely that the components of the conventional delivery mode have been used as a benchmark so as to ensure that learning will take place. For example, there should be some semblance of face-to-face teaching, tutorial discussions, or announcements of the conventional system in an eLearning process. Tutorial discussions could be replaced by online tutorials and announcements can easily be placed on the web. It is always the face-to-face teaching that needs to be replaced by the contents themselves. Hence the contents become the most important component in an eLearning delivery process.

4. What form does the content take?

The simplest form of content is text based. This is not only easy to digitize, but faster and cheaper too. In this format, what it needs is an excellent teaching module that incorporates the learning theories. It should be motivating, interesting, easy to

understand, precise and concise. It should provide the content in a very coherent and logically sequential form so that it can be easily be followed by the learners. Every part of it should be self-explanatory requiring little or no tutoring by the facilitators.

We know that it is much easier to make simple things complicated but not the other way around. The modules must be prepared by people who have rich experience in teaching the subject. Preferably, they should be the "best" teachers, who know what and how to teach.

The text based content normally will not jive well with eLearning of today where special programs have been developed for near natural graphics.

However, there are a good number of eLearning institutions that put content in the form of video-taped lectures. A slight improvement of that will be the burning of such videos on CDs. The video players can be done away with and easily replaced by PCs or laptops. For those who intend to put the content on the web, video streaming technique has been employed to enable such videos to be viewed through the internet. This technology has long been available and has continued to improve.

It is also understood that learning will be effective in an interactive environment. Although text based content can be made interactive, video based content cannot be made readily interactive.

The advent of advancement in graphic, animation and game technologies have attracted content developers to produce very highly interactive content. They have included considerable amount of graphics, animation and game in the content.

Whilst the content can be very beautiful, attractive and interesting, it will be useful to the learners, in terms of understanding the subject matter itself and not be diverted by the complex and beautiful animation or game.

The question is, does it help in learning? I will answer this question in a short while.

There are certain issues that need to be discussed before we go into the actual process of content development. Firstly, the cost of producing such multimedia rich content can be exorbitant. It depends on the period it takes to develop the content, which in turn depends on the cost of hiring the technical experts who develop the content.

Secondly it is very likely that the time taken to develop the content will more often than not exceed the budgeted or expected time frame. This is again another source of the high cost of production.

Thirdly, it involves a number of different types of skills, including multimedia programmers, graphic artists, instructional designers and subject-matter experts. It can be very frustrating to try and bring together, with the rest of the team.

5. Development of multimedia rich content

Ideally, the first step towards developing an effective content for learners is to have a completely written module by a very experienced teacher of the subject. For example, to ask a university professor of mathematics to write a mathematics module for a primary level curriculum may be a disaster. Although there are exceptions here, it is generally true that a university professor will not be able to bring his level down to the primary level.

Knowing academics, this itself is not an easy task. In order to ensure the module is completed on time, the cost of the module may have to be reasonably high.

The completed module will be given to the developing technical team. The team is normally headed by an instructional designer. If the module is big, then the team may have a few instructional designers. Instructional designers normally would conduct the analysis, which is the first stage of the content development.

Analysis is a process that evaluates the type of students, their level of understanding, the sort of motivation they need, the means of capturing their interest, their span of attention, etc. Secondly, analysis also involves the breaking up of the topics into sub-topics, the identification of objectives and sub-objectives for each topic and sub-topic, the sequencing of topics to ensure a good flow of coherent information that jives well with the learners' level of understanding, motivation and learning.

Thirdly, analysis incorporates the general theories of learning into the subject matter which conforms with the learners' general ability to comprehend the content. This is the most challenging part of the analysis which requires rich experience on the part of the instructional designers who should not only understand and appreciate such theories but also be able to relate such theories to the subject matter in question.

The second stage of content development is the story boarding that charts the general and specific flows of the content into a very coherent and integrated form. This is done with utmost care, taking into consideration the learning capabilities of the target learners. Story boarding provides the general direction and leads to the learners. A wrong story boarding will undoubtedly create confusion to the learners. This stage is still done by the instructional designers.

The third stage is the development. The development of the content actually constitutes two important parts. The first is the creation of elements or objects in graphical form by the graphic artists. The purpose of creating elements is to avoid plagiarism. Original creation of elements does not only take time but can be very costly indeed. These elements must also match the text in design, color, shapes and sizes. In addition to the elements, animation and game may be included to enhance the content which otherwise could only consist of text and sound and some elements.

The second part of the development stage is the integration of the text, sound, elements, animation, game, etc. through multimedia programming. This is the last stage of development which would make the final format of the content as guided by the story boarding. At the end of this stage is the finished product but not yet tested.

The fourth and final stage is the testing and evaluation. Testing is the correcting stage which probably is as important as the other three previous stages. At this stage, all the features need to be tested to ensure they are in good working order. The texts must be perfect with no errors in structures, grammar or even spelling. They must also be synchronized with the sound (voice) or even music.

Finally the content must be sent back to the subject matter experts for evaluation and signing off. Any correction will have to be done after obtaining feedback from the subject matter experts. In some cases, evaluation by the users is also done in order to test the effectiveness and suitability of the content.

6. UNITAR's experience

6.1 The CD-based content

At the initial stage, UNITAR developed the contents on CDs because of the deficient ICT infrastructure at that time. The CD-based courseware or content was the most convenient because it allows the use of heavy multimedia content without any worry about the bandwidth problem at all. We could insert a good amount of animation that could clearly explain concepts, ideas, processes, which otherwise would be very difficult to explain. This to me is a great advantage of developing such content.

It is possible to make the content very interactive that enhances understanding. It is also user friendly by creating glossary of terms, dictionary, bookmarks, note pads, etc.

Moreover, the available technology did

not allow us to develop the web-based materials, even if the ICT infrastructure allowed us to do so.

We found the CD-based courseware took a long time, in fact, more often than not we overshot the timeline. The long duration it required to develop the content inflates the cost of production. In order to shorten the period we needed to increase the manpower. The net effect on cost is still the same.

The second disadvantage is that once the courseware has been stored into the CD, it becomes difficult or near impossible to modify or update.

Thirdly, it is easily copied by others despite invoking a good security system. It was obvious therefore that the expensive CD-based courseware that we developed could not be easily sold to the market. In other words, selling CD-based courseware is not a good business at all. We ended up having to distribute "free of charge" to the students. Once it is free, it is often perceived as of low value by the students.

6.2 The Web-based content

After about two years of developing CD-based courseware, we switched to web-based courseware. We employed a more advanced technology that allows the multimedia content to be retrieved through the internet. This was a major breakthrough for UNITAR because it immediately reduced the cost of production, easier to modify or update and takes much shorter period to produce. The four stages of courseware development processes were still used though.

6.3 Teaching versus Resource-based content

Whether it is CD or web-based courseware, we are still producing what we call as teaching courseware or teaching CDs. In other words these contents are supposed to be easily understood by students. The students may repeat viewing the content as many times as they like, making learning very easy. The other great advantage is the uniformity of content for all students who use the same materials, irrespective of wherever they are. They can also view them or learn at their own pace and at times convenient to them.

After about four years of using the teaching based content, we realized that not all students appreciate it. This is especially so when the subject does not involve heavy technical materials.

It is also true that the more matured students, especially those pursuing higher degrees, do not require the teaching courseware.

For reasons alluded above, we converted to resource-based content that uses much less graphics and animation. It would be more text-based with a good mix of graphics to enhance understanding.

Again this switch further reduces the production time and cost.

7. Conclusion

Content development is still the most important component in eLearning environment. It affords flexibility for students to learn at their own time and pace, uniformity of content for all learners, enhances understanding through repetitive learning.

However, it could be very costly to develop because it is labor or skill intensive. The richer the multimedia content, the more expensive it will become. It is also possible to include various functionalities to assist learners in various ways. However, the more functionalities we include, the more time consuming and costly it becomes.

As an econometrician, I always evaluate the complex econometric methodology on the basis of its outcome. For example, if the outcome of a multiple regression is not significantly different from that of a simple regression, why employ the multiple regression at all.

In the same manner, why should we produce a very complex content with all sorts of functions that may not contribute much to learning? It would be better to produce a much simpler content that contributes as much to learning as the complex content.

Finally I must say that there have been cases where millions of dollars have been spent on contents that are not used. We need to be wiser.

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