E-LEARNING AND AUTHORING TOOLS : At a Glance

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ABSTRACT

Recently, a growing number of Institutions and business organizations have embraced the concept of E-learning. They use web based learning systems to fulfill their educational needs. E-learning authoring tools (or AT for short) enable trainers to integrate an array of media to create professional, engaging, interactive training content, and some make it possible to repurpose digitized elements or learning objects from an existing course for reuse in a new one. The choice of the best authoring tools for the right user is very important for the development of contents for E-learning. In This paper we are going to review on various authoring tools available in the market of E-learning and the need and importance of creating contents in E-learning, finally, we will classify the authoring tools.

Keywords: E-learning, Authoring tools, Classification, Specialized AT, Unspecialized AT

1. INTRODUCTION

E-learning is becoming an essential part in teaching and teachers are searching for the best method to represent their courses. Since 1LO becomes the small course unit that can be designed to be reusable, customizable and flexible; teachers prefer to find the authoring tools for creating interactive LO quickly and easily. Custom content is the new frontier of E-learning. Trainers are trying to identify ways to create and publish custom digital content for use on the Internet, intranets, or CD-ROMs. Some trainers seek high-speed deployment of critical information throughout an organization, while others want control of courseware and independence from programmers. [1]

Many organizations are attempting to reduce their training costs by developing E-learning materials in-house. Whatever the reason, more trainers are finding themselves researching the features, benefits, and cost of authoring tools. Through this paper, will be described the reason of the using authoring tools and How to find the best tool In Section 2, In section 3 the categories of tools will be presented. In Section 4 we will focused on the classification of authoring tools, the most tools. Finally, the paper will be ended by conclusions. [11]

2. AUTHORING TOOLS

To create a proper course for E-learning, you need an authoring tool to facilitate this work. The definition of authoring tool is “a program that helps you write using hypertext or multimedia applications and enable you to create a final application merely by linking together objects, such as a paragraph of text, an illustration, or a song. By defining the objects’ relationships to each other, and by sequencing them in an appropriate order, authors (those who use authoring tools) can produce attractive and useful graphics applications. [9]

Most authoring systems also support a scripting language for more sophisticated applications. Thus, these tools provide many facilities helping the author to create a good E-content for courses. In fact, E-content has very important features that make the work easier than paper-content which are storing, modification, reusability and sharing of information .[4]

2.1. Criteria for Choosing the Best Authoring Tool

Although selecting the best authoring tool requires close attention to detail, the process should be painless. Currently available tools offer a variety of features. If you have special needs, you'll certainly find a tool that meets them. However, most tools are designed to create basic E-learning courses for desktop or laptop computers. The software programs support a variety of media and file types, such as text, graphics, video, and audio. Most include assessment and test creation features.

To find the authoring tool that works best for you, conduct a needs assessment. Regardless of how much (or how little) you know about authoring tools, determine the functionality that's most important to your organization and create a shopping checklist.

The following points are intended to give you a basic understanding of authoring tools while provoking some analytic thinking to help you identify the capabilities and options that are most important to you.

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1 Learning Object
Automated Programming: By automating programming for online delivery, authoring tools liberate course developers from their dependence on programmers. A few authoring tools have the ability to write such programming languages as HTML, XML, or DHTML. The types of programming code or output formats vary significantly among tools. When evaluating candidates, compare the output formats for each tool. [9]

Interoperability and standards: The ability of an authoring tool to work with other E-learning software and systems is referred to as interoperability. The E-learning community has several sets of technology standards and is currently developing additional standards. The four most common standards are 2AICC, 3SCORM, IMS Global Learning Consortium, and Microsoft LRN. Authoring tools differ in the standards they support.

Question types: Trainers who develop courses are always interested in the different types of assessment questions that they can create with an authoring tool. Do you prefer fill-in-the-blank, matching, true or false, or short or long essay? If you’re a trainer with favorite question types, then find the tool that supports those kinds of questions.

Multiple learning paths: To accommodate differences among learners, some authoring tools have the capability to create variables, which is an important feature for adaptive learning. Courses created using variables are more complex to design, but they account for a range of knowledge and skill sets. If you develop courses that contain different tracks, you may want to add variables to your checklist.

Media and file support: Pay very close attention to media and file support. Most authoring tools support such common file types as JPGs, WAVs, and GIFs, while few packages support streaming video and audio. Be sure to inventory the file types you’ll use.

Extensibility: Some trainers need to customize the software for specific purposes. The ability to do that is called extensibility. If you or your organization requires some customization to the authoring software, be certain that you have a tool with open source code, which allows a skilled computer programmer to customize software to meet the trainer’s needs.

Cost: The most cost-efficient way to buy authoring software is by volume. Most companies that sell authoring tools have price schedules for multiple copy purchases, thereby reducing the per-piece cost and delivering higher cost efficiency. [1]

3. CATEGORIES OF TOOLS

The majority of authoring tools fall into two broad categories: the pedagogy-oriented systems which “focus on how to sequence and teach relatively canned content” and the performance-oriented systems which “focus on providing rich learning environments in which students can learn skills by practicing them and receiving feedback.” There are seven categories of ITS authoring systems according to the type of ITSs they produce. These are:

i) Curriculum Sequencing and Planning,
ii) Tutoring Strategies,
iii) Device Simulation and Equipment Training,
iv) Expert Systems and Cognitive Tutors,
v) Multiple Knowledge Types,
vi) Special Purpose, and
vii) Intelligent/Adaptive Hypermedia.

Thus, depending on the requirements and where the content would be implemented the appropriate choice of the content authoring tool can be chosen.

The common categories of authoring tools which produce content complying with the E-learning standards use some base software application. The most common ones are those that use PowerPoint presentations, Web based content and Flash based presentations. [8]

4. E-LEARNING SOFTWARE AND AUTHORING TOOLS

The classification of authoring tools can be based on different aspects such as:

• Complexity: the tools can be classified in range from simple to advance. The tools become simple when supporting drag drop facilities, wizard …etc. The advanced tools are those that require programming capabilities to build a course material and needs technical competency.

• Fee: the tools can be classified as free and commercial. Based on the center of learning and performance Technology, we find through the top 100 course authoring tools 2009 there are 19 free tools and the other need to be purchased.

• Purpose: the purpose of some authoring tools concentrate on creating courses. However, there are a number of multipurpose tools which are not specialized for creating online courses but are used.

2 Aviation Industry Computer-based Training Committee
3 Sharable Content Object Reference Model
There are a number of tools which are known to the most such as: MS PowerPoint, Front Page, Dreamweaver and Flash. However, the author, who uses these tools, needs to have a good command over programming to make an interactive course. Thus, there are software such as Articulate, Adobe Captivate, ObjectJ and 4GLO that concentrates on creating courses and LO without need for programming level. The subsequent topics will provide details about unspecialized and specialized authoring tools. [7]

4.1. Unspecialized Authoring Tools

- **MS PowerPoint**
  MS PowerPoint is presentation software used to create slideshow. The slides are usually linear and can include hyperlinks to jump to other sections. This allows the user to get to more detail on a subject of interest. In addition, it allow user to add audio and video clips in a presentation. Even though this tool is mainly for creating presentation, it is considered to be one of the most popular course authoring tools. [4, 5]

- **Flash**
  Flash has become a popular method for adding animation and interactivity to web pages. Flash is commonly used to create animation, advertisements, and various web page Flash components, to integrate video into web pages, and more recently, to develop rich Internet applications. Therefore, some course authors prefer using flash, because it allows many features and programming using Action Script. [6]

- **Front Page and Dreamweaver**
  These tools used to create WebPages. They provide an easy way to create links and images without need to know about HTML. However, these tools alone cannot provide the interactive course. It needs the help of other tools and graphics designers.

4.2. Specialized Authoring Tools

The growing of E-learning leads to create special authoring tools that help authors and fulfill the needs for creating course in easy way. The following are the most popular courses authoring tools.

- **Articulate**
  In Articulate Studio Package the most three important authoring tools are Presenter, Engage and Quiz Maker. These authoring tools are used inside MS PowerPoint. The Presenter allows adding interactivity and narration compiling to create flash presentation. In addition, it provides features to get attention and inspire learning such as:
  1. Animated annotations that highlight important points.
  2. Clear, crisp images and video.

Quiz Maker allows creating group and randomizing question pools quickly. It provides the following feature:
  1. Branch quizzes takers to different slides depending on how they answer each question.
  2. Animate objects and adjust their timing on the click-and-drag timeline.
  3. Choose from a wide selection of professionally designed themes or create your own.
  4. Give your quiz takers specific results and feedback based on their scores.
  5. Get quiz results through e-mail. [3]

- **Adobe presenter / Captivate**
  Adobe Presenter helps to easily create professional Flash presentations and self-paced courses complete with narration. In addition, it allows adding animations, quizzes, and software simulations to E-learning courses. Similar to articulate, this tool is also based on MS PowerPoint and can rapidly author professional E-learning content with interactivity, simulations, quizzes, and other experiences no programming skills required. However, Captivate does not need MS PowerPoint because it is independent. [10]

- **GLO Maker**
  1. GLO Maker is an authoring tool for creating rich, interactive learning resources. It builds on the extensive Publish to HTML package.
  2. Publish to CD-ROM.
  3. Publish to SCORM 1.2 and SCORM 2004 package for import to any LMS supporting this standard.

Experience of the CETL in Reusable Learning Objects. It is open source and free for educational use. GLO Maker authoring tool is based on the new concept.GLO approach inverts traditional approach for reusability.

The traditional approach to the reuse of learning objects has been to separate content from context in order to

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4. Generative Learning Object
5. Hypertext Markup Language
6. Learning Management System
7. Centre for Excellence in Teaching and Learning
make the content reusable. However, in GLO, it extracts successful pedagogical designs and makes these the basis for reuse. [10]

- **E-learning Authoring Tool**
  The E-learning authoring tool is a simple, easy-to-use tool for creating online course content. Its design allows you to create rich media courses containing text plus images, Flash animations, audio and video created with your favorite media editors. Every course you create will fully conform to the SCORM standard. With the AT, you can quickly create courses for employees, customers, partners, or even the general public. Your learners will enjoy an easy to navigate course with a clean, professional design. You will not need any programming skills to create courses with the AT. You author your course with easy to use forms and a built-in HTML editor. [10]
  When you deliver your course or test with a SCORM-based LMS, the questions are automatically graded and the results sent back to the LMS. The AT reports the overall score (raw, minimum and maximum), the course status (incomplete, completed, passed or failed) and the results of individual questions. [2]

- **ObjectJ Authoring Tool**
  ObjectJ Authoring tool is an E-learning Content Authoring Tool which is easy to use for instructors and provides highly synchronized interactive content. ObjectJ Authoring tool supports the whole authoring process from high-level outline to fine-tuned timing using an instructor-centered user interface. This tool provides features to get attention and inspire learning such as:
  * Easy to use for instructors and covering the authoring process from providing lesson outline to detailed timing and synchronizations in a single, easy to use storyboard view.
  * Providing highly synchronized interactive content and Support for different types of media clips, including audio, video, and flash components.
  * Supports thin-client model for authoring. Whole functionality is accessible through the web browser. No client management is necessary.
  * 8 AICC-standard compliant
    The produced content is fully AICC-compliant and can communicate with any standard LMS.
  * Supports Java applets and ActiveX components
    Both Java applets and ActiveX components can be embedded in the content to increase interactivity. This feature enables having complex simulations, virtual labs, or tests in the content. [12]

- **Advanced E-learning Builder**
  The Advanced E-learning Builder authoring tool is designed for creating e-learning materials such as e-tests, tutorials, quizzes, etc. The system enables the creation of E-tests, just with several mouse clicks (visual design), which contain several types of exercises. The Advanced E-learning Builder authoring tool creates Standalone EXE files. By planning exercises in visual mode, exercises can be designed, corrected, examined, complemented, and updated in a simple and survivable way. Various elements such as gap-fill tasks, multiple choices, and alternative questions are used to set tests questions. Additionally, many other elements such as various types of texts, graphics, multimedia, Object Linking and Embedding - buttons ensure that your test has an attractive look and professional feel. And, all these elements can be easily moved and resized using a mouse. Elements offer various customization possibilities including changing colors, fonts, and contents; thus, creating and modifying all kinds of e-tests is quick and easy.
  Visual design mode allows the building of E-learning materials in a simple and comprehensive way. Therefore, you can always see exactly how the final test to be deployed to students will look. Additionally, built-in dynamic resolution assures you that a test will automatically adjust to all possible screen resolutions that end-users may have so the look won't be deformed in any way. [13]
  Advanced E-learning Builder also contains many pre-defined test templates that allow you to make professional looking tests in no time at all. This way, creating e-tests is as easy as editing text in a word processor, which allows beginners to start using the application immediately. An additional feature of advanced E-learning Builder is test flow control, which allows you to write teaching sequences that can adjust to the students' knowledge and supply students with additional information when needed. This way, individualization is granted. All tests created with advanced E-learning Builder are finally graded and supplied with a customizable commentary. The package also contains a real world example that can be used in the class with, or without, customization.

5. **CONCLUSIONS**
Nowadays, there is a large movement from education institutions and universities for using E-learning and increasing population to choose the best AT to create a proper course for E-learning. In addition, all produced learning contents are conforming to the SCORM standard, which makes better the contents interoperability and

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8 Aviation Industry Computer-Based Training Committee
reusability. Therefore, Improving authoring tools is important and one of the main points is, to enhance them for the easily usage and having professional output.

This paper proposed several authoring tools with the goal of designing and creating the contents which should provide the learner with all the necessary tools.

Therefore many organizations are attempting to reduce their training costs by developing E-learning contents in-house. Whatever the reason is, more trainers are finding themselves researching the features, benefits, and cost of authoring tools. Choosing an appropriate authoring tool in E-learning can help to solve many problems including the needs of growing communities to educate people, Lack of access to educational, shortage of training costs and economic opportunities. There are many advantages in this type of training that will cover the problems.

6. REFERENCES