ToolBook Instructor as an Interactive Multimedia Authoring Tool

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Abstract – Multimedia authoring tools are deservedly popular for their potentially high effective productivity and usefulness for prototyping. However the development can cause problems if these authoring tools are not properly evaluated and used. In this work we employed ToolBook® to develop several interactive multimedia coursewares and evaluated its usefulness. The results of the study showed that ToolBook has both strength and weaknesses despite providing good elements for authoring such as navigation, interactivity, features, media support, deployment options and assessments.

Keywords – authoring tools; multimedia; interactivity, education, courseware

I. INTRODUCTION

Many institutions are improving the methods of teaching and learning due to technological advancements that is changing from traditional to digital materials. On the other hand academicians today face challenges of preparing their students for this competitive environment. One technology that has contributed significantly to this change is the availability of interactive multimedia authoring tools which could be used to develop digital learning materials. In addition most of these authoring tools are making the production process of learning materials easier and relatively straightforward task for non expert programmers by providing a variety options of objects types for which properties can be set and scripts can be written [1].

Authoring tools such as ToolBook, Authorware, Multimedia Builder, Platypus Multimedia Author, Illuminatus, Flash and Director can be used to develop multimedia applications that are engaging, user friendly and easy to use. However in this work we have employed ToolBook to design several educational coursewares and we discussed the strength and weaknesses of this authoring tool.

II. TOOLBOOK COURSEWARES

Till date, many coursewares have been developed using ToolBook. For example a microprocessor tutorial built by [2] for engineering students. This courseware was developed to teach advanced concepts in microprocessor based design systems using the Intel 8086 microprocessor and its associated peripheral devices. The study found that the courseware helped in increasing the learning speed and improved comprehension of the students. At Fairfield University [3] a courseware using computer puzzles to teach critical thinking skills was developed. In this courseware students were introduced the question of analysis and problem solving by using a puzzle exercise. Virginia Westwood, Protea Textware Ptd Ltd. created Spelling Fusion, an interactive CD-ROM of English spelling and vocabulary development for adults. It is available in American English, British English and Australian English versions. It is database driven with interactive exercises, games, voice recording and student tracking, with over 4000 head words arranged by familiar topics, 16000 voice files, 8000 photographic images and hundreds of animations.

III. TOOLBOOK BACKGROUND AND FEATURES

ToolBook was introduced by Asymetrix Inc. in the mid 90s, later changed its name to Click2learn and then merged with Docent to form SumTotal Systems. Over the years it has improvise its features and functions to meet evolving learning industry demands and the latest version 10.5 as shown in Figure 1. is now available. ToolBook is an authoring tool that uses book metaphor and can be used to develop interactive CD-ROM based courseware, e-learning content for the Web and other multimedia applications. It also claims to make production for non-expert programmers a simple and relatively straightforward task by providing a wide selection of objects types for which properties can be set and for which scripts can be written. This section briefly describes the features and functions of ToolBook.

Figure 1. ToolBook 10.5 interface

We did an evaluation of the ToolBook authoring environment and later developed a few applications to further test its strength and weaknesses. Table 1 summarizes the elements of the tool based on navigation,
interactivity, features, media support, deployment option and assessments. Further details of the ToolBook environment are available at [4].

Table 1. Elements of ToolBook

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<tr>
<th>No.</th>
<th>The ToolBook Environment Element</th>
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<tr>
<td></td>
<td><strong>Features</strong></td>
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<td></td>
<td>• The ability to produce content for Windows Mobile and Apple iPad, in addition to the already supported iPhone, iPod Touch, and Google Android.</td>
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<td>• Geolocation support for mobile content that enables authors to create learning content that can take into consideration a user’s geographical location.</td>
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<td>• iPhone support for drag-and-drop, providing users the ability to drag objects around the iPhone screen with their fingertip.</td>
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<td>• An updated Quick Start tab on the Startup Dialog box (Figure 1) that now includes a set of templates sized for optimal viewing on various devices including iPad, Windows Mobile, iPhone (iPod Touch), and Android.</td>
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<td>• Provides an add-on for Microsoft Office PowerPoint 2007 that allows an author to convert a PowerPoint presentation to a ToolBook Book.</td>
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<td>• Content from PowerPoint, PDFs, Word Docs can be embedded. PowerPoint Slides can be converted to ToolBook application directly.</td>
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<td>• Content Templates (for Sales, Compliance Training, Health &amp; Safety, Policies), Smart Pages (Menus, Bullets, Text, Questions, Background, Fields) and Smart Styles (Templates for ToolBook or iPhone).</td>
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<tr>
<td></td>
<td><strong>Navigation</strong></td>
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<td>• Numerous navigational panels are provided that allow quick drag and drop options (i.e. Exit, Next, Previous, Menu buttons)</td>
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<td><strong>Deployment options</strong></td>
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<td>• Native – distributing a ToolBook book on CD-ROM to run from a CD-ROM, installed to a learner’s hard drive along with a set of generic runtime files, or installed to a Local Area Network drive along with the generic runtime files. This method allows only for deployment to a Windows Desktop.</td>
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<td>• HTML – publishing a ToolBook book to HTML package for copying from a CD-ROM, copying to a learner’s hard drive, or copying to a Web Server and then viewing it using a Web Browser.</td>
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<td></td>
<td><strong>Interactivity</strong></td>
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<td>• Interactions can be achieved in various forms i.e. hotspots, feedback, control, creativity, communication, text input etc.</td>
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<td><strong>Media support</strong></td>
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<td></td>
<td>• Audio/Video: avi, mov, asf, mpeg, wav, midi, rma, aif, CD audio, flash and universal media player.</td>
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<td>• Images: BMP, DIB, WMF, DXF, GIF, CDR, CH3, SY3, JPG, PCD, PIC, PCT, DRW, PCX, EPS, TIF, TGA</td>
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<td><strong>Assessments</strong></td>
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<td>• Various assessments / questionnaire types &amp; styles are available such as fill in the blanks, true/false, multiple choices, sliders, match items and drag objects</td>
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</table>

IV. COURSEWARES DEVELOPED AT UNITEN

Numerous coursewares were developed using ToolBook at UNITEN by students pursuing the Masters in IT course (taking the MITM693 Multimedia Applications subject). We discussed selected coursewares in some details in the subsequent sections. All coursewares were developed using the Analysis, Design, Development, Implementation and Evaluation (ADDIE) instructional design model [5].

a. An Interactive Map on Geography Courseware

The objectives of this courseware were to show the location of Iraq on the world map and teach about the cultural characteristics, places and events that happen and to show how the processes of human and physical systems have arranged and changed the surface of earth. In this courseware (see Figure 1) users could see where the country Iraq is located geographically on the world map. Once the map of the country is shown, the users may further click on any of the states as shown in the figure to gain more information. In this example when the user clicks on the Basrah state, information such as population, size of the state, main cities and language spoken will be shown on the screen. A zoom in snap of Basrah is shown in Figure 2. The cities are shown in details as can be seen on the bottom right and some snap shots at the top and left of the Figure. Figure 3 depicts the transportation i.e. road and railway tracks whereby users may click on any of these to see the distance from one city to the other. To gauge the users knowledge, a quiz is prepared in the form
of multiple choice, true and false and fill in the blank questions as shown in Figure 4.

![Figure 1. Interactive map on geography](image1)

![Figure 2. A zoom in snap of Basrah](image2)

![Figure 3. Transportation, road and railway tracks](image3)

![Figure 4. Multiple choice questions in the interactive map courseware](image4)

### b. The Human Heart Courseware

The objectives of this courseware were to provide medical students and health officials to have quick access to heart related information in an interactive manner. Secondly to test final year general medical students to see if they could better improve their knowledge by using this approach and increase their understanding of the structures associated with the heart and the circulatory system. In addition to provide knowledge to non medical users an overview of heart diseases and the available methods of treatment. Figure 5 depicts a video explaining the parts of a human heart while the user could also scroll and read the information shown on the left pane. Students may also test their understanding by answering the interactive questionnaires provided at the end of the tutorials. As for example Figure 6 depicts a matching style questionnaire whereby the user needs to click and select an answer from the clickable buttons shown on the left and drag it with the mouse to match it with the label on the heart figure on the right.

![Figure 5. The human heart courseware](image5)

![Figure 6. Matching questions in the human heart courseware](image6)

### c. An Interactive Mind Mapping Courseware

The objectives of this courseware were to provide students a learning environment that engages them in an interactive manner to learn geography. Secondly to design a fast learning revision courseware that could help students remember important concepts of the subject matter just before the exams. In addition to reduce the cognitive...
workload of using a text book to learn. In this courseware we introduce a new concept of learning geography i.e. using concept mapping as shown in Figure 7. The main idea of this courseware is to provide small chunks of information that are significant for the student to remember and relate with the theory they have learnt in the classroom. The aim of this method is to enable the student to grasp and remember the information faster. Numerous flash based animations are also used to make this courseware more dynamic as compared to the static book. Examples of these animations are shown in Figure 8. Interactive menu as shown in Figure 9 provides a fast and easy way to move to other topics in the courseware. To test the students understanding a list of questionnaires are provided throughout the tutorials as shown in Figure 10. Students may click the question icon so as to see the question and provide the answer in text input boxes.

V. STRENGTH AND WEAKNESS OF TOOLBOOK

In this section we briefly describe the strength and weaknesses of Toolbook as an authoring tool for developing multimedia courseware from our experience. We explained three coursewares developed in section four of this paper and found the following advantages and disadvantages of using ToolBook. In terms of principle strength, Toolbook provides the following possibilities:

- A new user with some basic IT background could easily develop simple courseware without having to refer to lengthy manuals;
- It has powerful and extensible high level scripting language;
- It has fine control of high and low level interface features;
- It has customisable development environment;
- Provides a variety of questionnaire types and easy to develop quiz questionnaires;
- Contents can be easily converted from powerpoint slides and to Mobile based applications.

Despite the advantages stated above, we encountered the following weaknesses of Toolbook:

- The runtime ToolBook file is required to run the application;
- There are lack of compatible development support tools (e.g. code analysers, version control, cost estimation);
- At present it is available for Windows PC only;
- Quality of imported images is poor;
- Does not provide good drawing tools like Flash and Director. 
- Information previously entered in text input boxes does not get flushed out when the user reloaeds the page;
- There are limited functions in the scripting language.
- A strong database support is still lacking in this authoring tool (at present supports dBASE & Paradox).
CONCLUSIONS

Creating a multimedia courseware is multileveled and time-consuming. In this paper we used ToolBook to develop several coursewares using Toolbook 9.5 and evaluated the strength and weaknesses of the authoring tool. We noted that although ToolBook provides good elements for authoring courseware such as navigation, interactivity, features, media support, deployment options and assessments it still lacks certain elements that could improve the authoring process as discussed in section five. In summary Toolbook provides good support for producing basic resources containing text and still graphics with basic navigation options. Toolbook provide good capabilities in the use of additional multimedia elements (i.e. Flash files). Toolbook provide good support in the use of video and MCI control as well as videos and transition effects. Toolbook provides good capabilities for the provision of questions with feedback, allowing fast and easy creation of tests and scoring of responses without scripting. The generation of feedback for given learner responses is also relatively easy in Toolbook, and the degree of support for scoring and for control over the number of attempts allowed is also good. Although screen space could be limited for mobile based applications, our future extension is to convert the developed coursewares for testing the contents in a mobile based platform to see if it is effective to learn.

ACKNOWLEDGEMENT

We would like to thank all students involve for their significant contribution in the development of the coursewares discussed in this paper.

REFERENCES


