

IT Enabled Educational Technology For Leather Processing

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Abstract— Advances in information technology have made delivering e-content easier to subject experts and to publish on the web with minimum skills and assistance. This paper deals with the creation of e-Book (Digital Book). The term digital book means an electronic book (or e-book) is a book publication made available in digital form. Digital libraries are large organized collection of digitized objects comprising of texts, images, graphs. The text rich education e-Books can be enhanced the reader's level of understands by adding them dynamic interactive visuals. In current trend, the e-Book can be read online or offline through smart phones without carrying the bulky p-Book (Paper Book). An e-Book is now capable to deliver not only text and images, but also audio and video viewed using Internet. This project mainly focuses on merging the interactive multimedia features like images, offline videos and even programmable features which have dynamic response based on the reader's action in digital interactive e-Book. Then, it performs the scientific calculations and having Offline test features like Quizzes. The result of this paper is to develop a digitized ecosystem supported with activate and interactive contents in e-Books.

Keywords- Digitized e-contents ecosystem, , e-Book

I. INTRODUCTION (HEADING 1)

All Mobile devices are increasingly growing in popularity in the home and at work. Nowadays, a smartphone [2] has become indispensable and irreplaceable in the majority of people's daily life. It generates educational opportunities for students via e-Book and other multimedia features.

An electronic book (e-Book) [1] is an electronic version of a traditional paper print book. Other than that, the e-Book also can be downloaded onto computer/mobile. Currently, e-Books have been evolved from text and images to multimedia assets.

Users are able to customize their e-Book through software such as changing text size, adding bookmarks, and highlights important texts. One of the aspects to be taken for e- Books is memory. The memory [1] refers to the size of the file.

The smaller the file, the better it is as it enables devices to load the file almost instantly. However, high quality file or pictures inside the e-Book may sometime cause the e-Book to take high memory

Therefore, proper technique is essential to maximize the content and minimize the memory. Thus, a balance between adherence to the paper book metaphor and integration of the interactive power of computers is necessary to allow for a better appreciation of e-Books. ePUB is also the members of eBook file format which was invented in 2007. ePUB3 is based on Web technologies such as HTML, JavaScript and CSS. These three technologies enable ePUB to accommodate audio,

video, interactivity and other important features. As predicted that the future of e-Books will include more interactive formats such as hyperlinks and multimedia. Therefore, the possibility for an e-Book to contain innovative and interactive features will absolutely benefit.

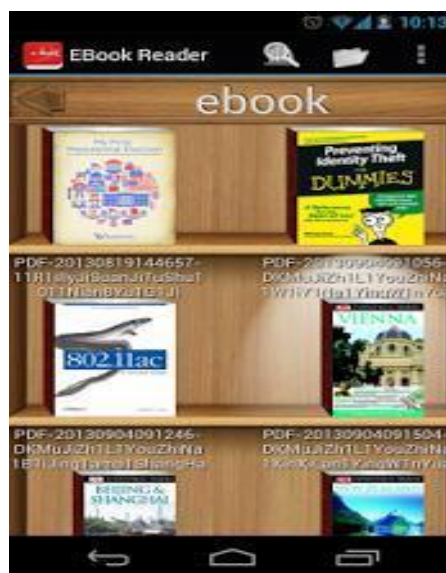


Fig.1 Component of multi-rich interactive eBook

II. ARCHITECTURE

At the beginning [1] e-Book was defined as paper books converted to a digital format which using scanner or typing in order to allowed them to be displayed on computer/mobile.

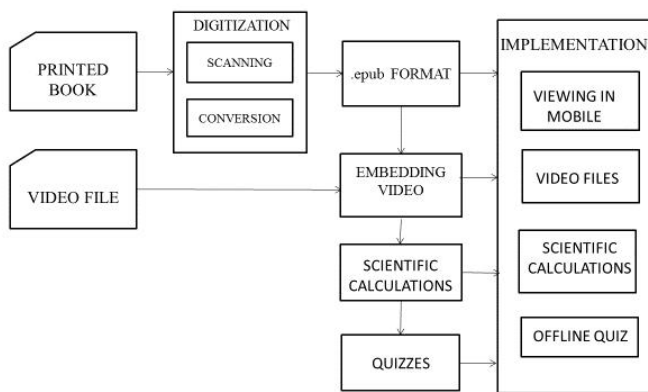


Fig.2 Architecture Diagram

The printed book is taken as an input to digitize. Digitization is the process of converting information into a digital format. A scanner captures an image (which may be an image of text) and converts it to an image file, such as a bitmap. An optical character recognition (OCR) program analyzes a text image for light and dark areas in order to identify each alphabetic letter or numeric digit, and converts each character into an ASCII code and displayed as a text file. EPUB is an e-Book file format with the extension .epub that can be downloaded and read on devices like smartphones, tablets, computers, or e-readers. The ePUB container must contain: At least one content document. One navigation document. One package document.

The video is uploaded in an e-book to view in offline. Calculation are done inside the epub format and quizzes are taken inside the e-Book to validate the user.

III. IMPLEMENTATION

This project is based on creating an e-Book which includes Offline video, scientific calculation and Offline Quizzes. The three-tier approach is used. On front-end Bootstrap, middle-tier Angular JS are used for calculation and Back-end XHTML, XML and CSS are used for chapters, styles etc.

A. Module 1: DIGITIZATION

The printed book is taken as input and it is scanned and converted into .epub format.

Processing steps

i) Scanning:

The image of the printed book may be sensed "off line" by optical scanning. The scanned image will be in .jpeg format.

ii) Image cropping:

Image in the scanned copy are cropped separately before converting into text.

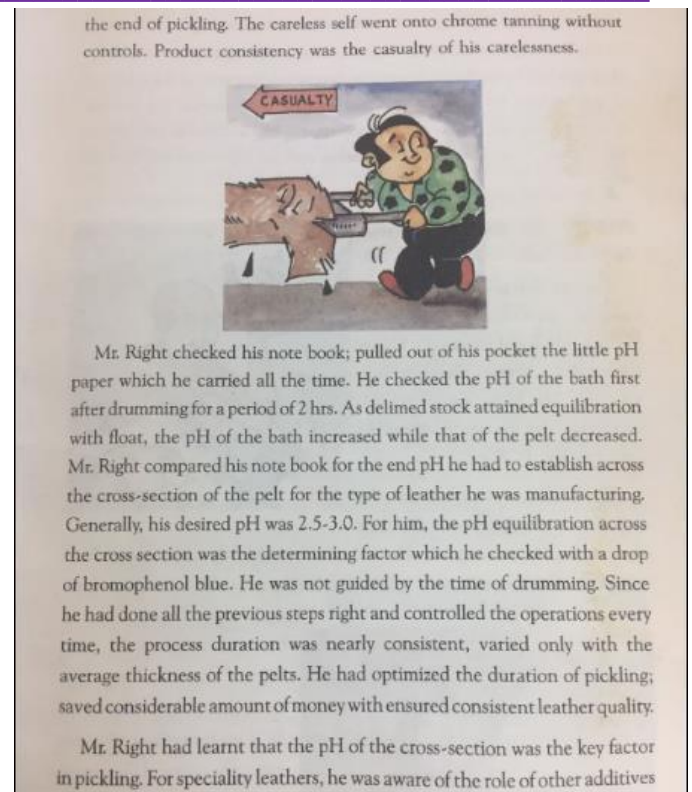


Fig.3 Scanned copy

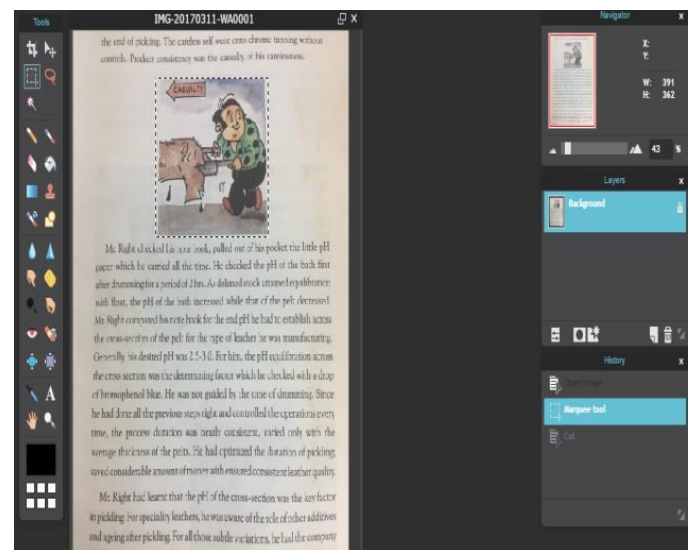


Fig.4 Image Cropping

iii) OCR:

The image format of the book is converted into text by optical character recognition. The text in the scanned image are converted into ASCII code.

Dashboard

1 STEP Recognition language ? Output formats ? Multipage document ?

ENGLISH
AFRIKAANS
ALBANIAN
BASQUE
BRAZILIAN
BULGARIAN
BYELORUSSIAN
CATALAN

☐ Adobe PDF
☐ Microsoft Excel 97-2003 (xls)
☐ Microsoft Excel (xlsx)
☐ Microsoft Word 97-2003 (doc)
☒ Microsoft Word (docx)
☐ RTF document (rtf)
☒ Text Plain (txt)

All pages
Page numbers: 1,2
☐ Convert to Black and White (for photos)
☐ Combine files into multi-page (for ZIP archive)

2 STEP

Select file...

editedpic.jpg

3 STEP

CONVERT

Fig.5 Optical conversion

iv) TEXT FORMAT

The converted text and the cropped image are placed in the open office and checked for spelling.

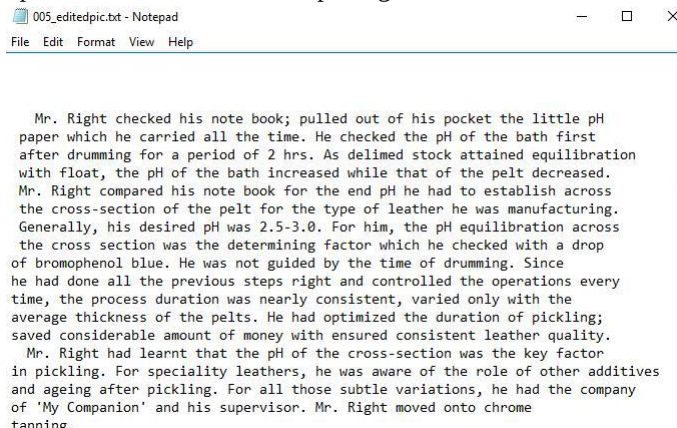


Fig.6 Text format

v) EPUB FORMAT:

The word document are uploaded and converted into .epub format is called e-Book. Three technologies XHTML, CSS and Angular JS enable ePub to accommodate audio, video and other interactive features.

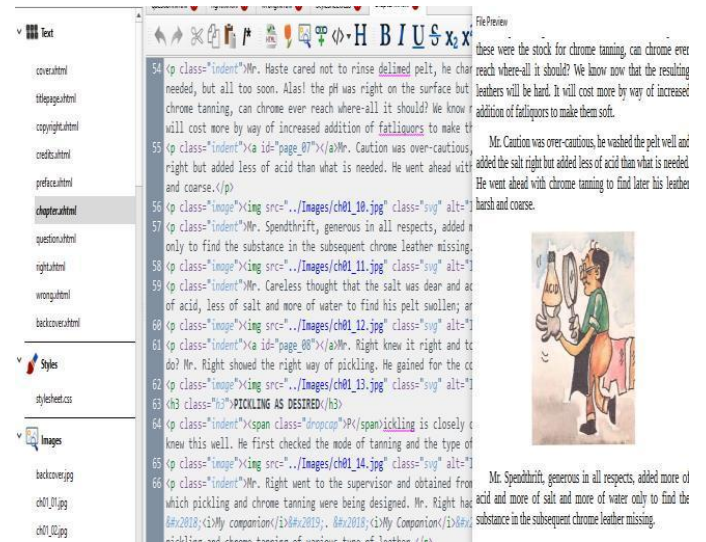


Fig.7 Digitized Format

B. Module 2: EMBEDDING VIDEO

Embedding a video in an e-Book will make more interactive than simply viewing it. In a paper and ink book we cannot embed video and sound, but interactive e-Books can do. We can embed the media files into the e-Book using the .epub format. A video can be added to a page to play at the size, it is placed or use video controls to allow the user to play the video in full screen.

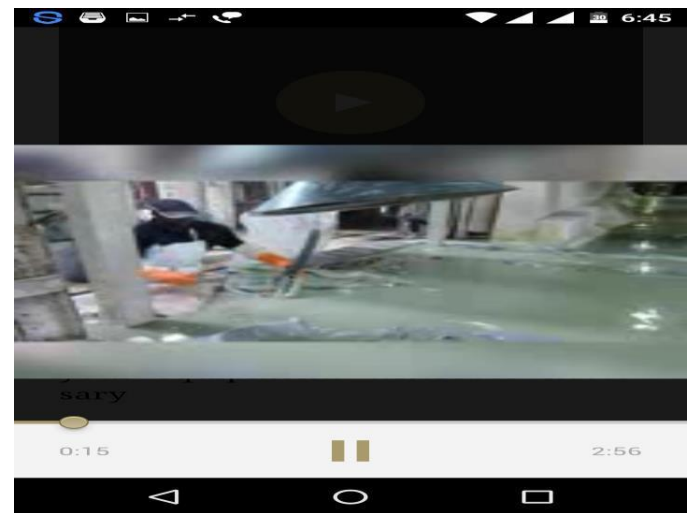


Fig.8 Embedded Video

C. Module 3: OFFLINE QUIZZES

A key aspect of any learning scenario is the assessment of the degree of learning that is taking place. Traditional end of chapter quizzes is replaced by embedded adaptive assessments. Interactive tasks are not only measure whether concepts are mastered, but can also adapt the presentation of materials to facilitate learning.

QUESTIONS:-

1. The term BCS stands for _____?
A) Biological chromium sulphate B) Basic chromium sulphate C) Base chromium sulphate
2. In chrome tanning, more water is needed or not _____?
A) Yes B) No
3. How many days needed for chrome tanning process _____?
A) 1 day 12h B) 2days C) 1 day
4. What does chrome tanning involves _____?
A) Salt B) sulphate C) BCS salt
5. The pH range for pickling _____?

31 % 53 of 56 6:43 PM

Fig.9 Quiz

If you choose any options under the question, then it would direct to right or wrong answer. The question page is redirected only when you click right or wrong in the page.

Right Answers



Fig.10 Result for the quiz.

D. Module 4: SCIENTIFIC CALCULATION

The calculation is performed inside the book based on the user needs. The formula is coded behind the book only the result is viewed in the book. Here, the quality of product is checked for the leather by using volume, normality and weight of the leather.

Product Quality

Volume:

Normality:

Weight:

Product Quality: 600

Fig.11 Calculations

IV. CONCLUSION

The whole package is implemented in mobile for convenient view of users. This application is developed for e-Book that supports active and interactive multimedia features like videos in Offline, quizzes will make us to gain more knowledge about what we have learned in the book and calculations will help to solve the problems directly in the e-Book itself.

V. FUTURE ENHANCEMENT

The future work for this application is to enable the e-Book in web browsers for different users all over the world. It is also suggested that this application is compatible when we include augment reality features and animated pictures. Users can create an application to support the scientific calculation using pagination.

REFERENCES

- [1]. Merging Graphic Design and Multimedia features in Digital Interactive-Book for tourism purposes published by Faculty of Creative Arts and Design, University Malaysia Sarawak 94300 Kota Samarahan, Sarawak, Malaysia in 2015.
- [2]. User's Expectations on Interactive Travel Guide e-book published by Faculty of Creative Arts and Design, University Malaysia Sarawak 94300 Kota Samarahan Sarawak, Malaysia in 2015.
- [3]. Creation of Knowledge Portal using latest IT tools and Mobile Content Delivery System, Latha Anantharaman, CLRI in 2015.
- [4]. www.w3schools.com
- [5]. Searchcio.techtarget.com
- [6]. Edutechwiki.com