DIGITAL TEXTBOOKS PLATFORMS: TRENDS AND TECHNOLOGIES

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Resumo

Analisar a experiência do utilizador com manuais escolares digitais e plataformas de mediação requer uma análise contextual e pesquisa preliminar. No presente estudo recorreu-se à análise de 14 plataformas, consideradas mais proeminentes, e dos seus módulos mais significativos.

Neste contexto foram analisadas catorze plataformas e examinadas as suas soluções e recursos mais relevantes. Através desta análise foi possível verificar os recursos mais comuns e quais os mais singulares entre as plataformas, podendo tais constatações contribuir para desenvolvimentos futuros neste domínio.

Nas conclusões deste estudo poder-se-á verificar algumas tendências observadas e considerações relativas ao futuro dos manuais escolares digitais.

Palavras-chave: Manuais escolares digitais, e-livros, plataformas de manuais, tecnologias de ensino e aprendizagem, recursos educativos digitais, experiência do utilizador.

Abstract

Analyzing the user experience of digital textbooks and platforms requires some contextual and background research. This was done by analyzing 14 of the most prominent platforms and auxiliary modules.

There were fourteen main platforms briefly analyzed along with their most significant solutions and resources. Through this analysis it was possible to find some common features and other distinct implementations that can contribute to future work in this area.

In conclusion, there are some contextualized trends observed in the analysis and some considerations to be made regarding the future of digital textbooks.

Keywords: Digital textbooks, e-textbooks, textbooks platforms, teaching and learning technologies, digital educational resources, user experience.

1. INTRODUCTION

Netbooks and tablets have endowed users with, not only portability, but above all, new paradigms of interaction and functional versatility that goes beyond the use of

"traditional" computing. However, the appropriation of new media in schools, such as support for playback of digital educational resources is devoid of consolidated strategies concerning usability evaluation of these resources. In schools there is an increase of, with regular presence in classrooms, a wide variety of technological devices such as smartphones and tablets, but in most cases, neither the teachers nor the administration know how to take advantage of these resources. It should however be noted that in Portugal a tablet with the most proficuous features has an approximate cost of the national minimum wage. The relationship between the acquisition cost and usefulness of these devices reflected on the effectiveness of work justifies, in the short term, the weak investment on these resources.

When addressing education and learning we cannot neglect one of the main instruments that have always accompanied every student: the textbook. In Portugal, traditional textbooks are the main business for few companies and when it comes to digital educational resources, the scenario is even more defined, with the notoriously overwhelming leadership of only one company. A vast majority of North American educational institutions are already pouring over identifying the positive and negative impacts of digital e-books on teaching and learning (Nelson & Hains, 2010). As we will see further, the investment of the main U.S. companies in digital textbooks products and research is vast.

The purpose of this approach is to identify key trends and technologies behind digital textbooks design in order to establish a background that enables the conceptualization of such resources tailored to the Portuguese educational system.

2. **DIGITAL TEXTBOOKS**

From CDs to Online – brief history

According to Chesser (Chesser, 2011) the advent of digital textbooks is grounded in the first appearance of CDs in the mid-1990s, an initiative by publishers in order to deliver digital versions of printed materials, and in some cases multimedia-rich content. The purpose was to make their print products more competitive and more importantly offer supportive resources for teachers. Regarding the resources, they were meant "to

be printed out by the instructor as needed" (Chesser, 2011).   As a result of this trend in 1997 the first electronic encyclopedia called "Diciopédia" by Porto Editora, published on CD-ROM format, was released in Portugal.

From the beginning of the last decade schools began to be equipped with computers along with an Internet connection. In the U.S. "one-to-one" computing initiatives appeared, first with Apple Computer and then with IBM (later Lenovo) (Chesser, 2011). In Portugal the technological initiator and supporter was the Portuguese Government that invested in projects in the area of Information and Communication Technologies (ICT) like: MINERVA (1985-94), Nónio Século XXI (1996-2002) and Internet na Escola (1997-2003). However, with the same objectives of the program "one-to-one", Portugal only began in 2007 with one more Government initiative program called "e.escola" (as part of "e.initiativas" project) with the motto "each student, one computer". So far, including all subprograms ("e.professor", "e.professor", "e.escola", "e.professor", and "e.juventude") were distributed 1.371.829 computers along with mobile broadband Internet connections ("e.escola," 2012). According to data from the Ministry of Education (GEPE - Gabinete de Estatística e Planeamento da Educação), there are 1,911,380 enrolled students and adults in education and training (data from 2010) ("Gabinete de Estatística e Planeamento da Educação (GEPE) - Números da educação," 2012), thus, we can estimate about 68% of students and adults involved in education and training have their own computer and Internet broadband access in Portugal. The generalization of Internet access and the availability of equipment and devices appeared to be the technical groundwork for e-textbooks (Chesser, 2011).

But then two hostile constraints arose regarding the impact of mass production of digital textbooks: publishers had never before signed author contracts that allowed for digital distribution, and they were unprepared for the commercial outcomes resulting from these publishing policies; during 2000, Napster and other *peer-to-peer* online services have emerged and many questions about intellectual property came to debate. The reflex of all this was that publishers became highly selective about releasing content into digital form.

The meaningful marriage between the digital tools and instructional aims, and the complete lack of uniformity in the technical environments of schools made implementation much more difficult than many had hoped (Chesser, 2011).

It could be said that since the last decade we have, up until the present, witnessed the manifestation of real tendencies in devices, platforms and users' attitudes. Amazon released Kindle, the first e-book reader that began to shape reading on screen. In U.S. the sales of e-textbooks and industry groups like NACS, MBS, and Simba started growing (Chesser, 2011), but the Kindle device appeared to be very limited, not taking advantage of colored textbooks and not supporting third party applications. Later came iPad from Apple and with it a new concept of mobile computing operated by gestures. With Apple's iPad came a new generation of devices, including the tablet, with key features like: flat touch screen, virtual keyboard, wireless connection, and a variety of other functionalities. In 2010 there was also the release of Nook e-reader and Nook Study (education-specific) from Barnes and Noble, again similar to an e-book reader competing with Amazon's Kindle as opposed to Apple's iPad. Natural iPad competitors have emerged, the best examples being Samsung's Galaxy and Transformer from Asus. These devices are supported by Android OS and therefore offer a more flexible market of third-party applications.

Concerning technology, the first Portuguese tablet solution by JP Sá Couto is about to be released. The same company that produced "Magalhães" is preparing the tablet version with the code name "MGT1", directed toward childhood education, equipped with Wi-Fi, Bluetooth and built-in broadband mobile connection for full Internet access (BiT, 2012).

3. **Digital Reading and Platforms**

Digital textbooks are also called e-textbooks by analogy with all other concepts of electronic services, platforms, and devices. We often see these concepts in a muddle, when addressing the digital textbooks issue; publishers regularly mix everything: the resource, the platform, and the device. It is therefore very important to distinguish these key concepts. The digital textbook or e-textbook is a resource, a package of electronic learning materials that could aggregate all kinds of multimedia and

interactive content. The platforms serve the purpose of presenting the e-textbooks, managing the digital library, and mediating the interaction. Devices are the physical medium to access platforms and e-textbook. They should, along with the platform, enhance the user experience.

The fact is that in general the focus continues to be given to the platforms instead of textbooks. Perhaps because the most interested in this approach are the major publishers who have focused on the transposition of the printed textbooks to digital and on the availability of this new resource. However, we can admit that, since, in most cases, the platforms are the only element that enriches user experience in the use of e-textbooks, such as adding notes, highlighting, navigation between content within and outside the textbook and the management of books and chapters.

4. **PROMINENT PLATFORMS**

The characteristics of some prominent platforms and some key features in order to identify the most common tools and services as well foresee some trends will then be analyzed and listed alphabetically. Some of the most relevant data were summarized in a comparative table (Table 1).

Table 7

Comparative Table (relevant features)				
Platform (name)	**Basic Features**	**Unique Features**	**Device Availability**	**Cost**
Apple iBooks 2	Highlighting; note-taking; "study cards"	Videos; 3D animations; interactive illustrations	iPad	Access to free and paid textbooks
Barnes & Noble NOOK Study	Highlighting; note-taking; color tags	Dual book view; "questions" to instrustors; "word	Web; PC; Mac; iPad; iPhone; Android	Access to free and paid textbooks

		lookup"		
CafeScribe	Highlighting; bookmark; note-taking	Allows to create reading communities	Web; PC; Mac; iPad; Android	Access to free and paid textbooks
Cengage MindTap	Highlighting; bookmark; note-taking; "flashcards"	Google Docs integration; learning platform (students and instructors)	PC; Mac; iPad	Paid Access; Demo version by request
Cengage YouBook	Highlighting; bookmark; note-taking	Students: discussion board; instant messaging. Instructors: embedding videos; changing text passages	Web; PC; Mac; iPad	Paid Access
CourseSmart	Highlighting; bookmark; note-taking	Students: Side-by-side; zooming. Instructors: edit offline	Web; PC; Mac; iPad	Paid Access
DynamicBooks	Highlighting; bookmark; note-taking	Students: online tests. Instructors: add animation,	Web; PC; Mac; iPad; iPhone	Paid Access; 2 week demo

		audio and video		
Flat World Knowledge / MIYO	Mostly directed to instructors: exercises; upload MS Word documents, PDF files and video clips; publish in multiple formats		Web	Free/CC license (textbooks)
Ingram VitalSource	Highlighting; bookmark; note-taking	read-aloud (vPage); search options by words and/or pictures (Bookshelf)	Web; PC; Mac; iPad; Android	Free (Bookshelf)
McGraw-Hill Create & Connect	Digital learning platform: tests; quizzes; videos		Web	Trial 21 days (Connect); Free access under registration (Create)
Pageburst	Highlighting; bookmark; note-taking	Social network interaction	Web; PC; Mac; iPad	Paid Access; Free resources (Evolve)
Pearson MyLab	Highlighting; bookmark; note-taking	Text-to-speech; LMS integration	Web; PC; Mac;	Access to free and paid textbooks
Wikibooks	Collaboratively writing open-content textbooks		Web	Free/open
Xplana	Highlighting;	Rotating	Web; PC;	Access to free

eReader	bookmark; note-taking	pages; study groups; social network integration	Mac; iPad; Android	and paid textbooks

4.1 Apple iBooks 2 / iBooks Author

Apple iBooks 2 is a free application to Apple iPad tablet, and because of that the interaction is designed to use multi-touch gestures to navigate. Swipe finger moves offer navigation throughout thumbnails or page content. By producing rich engaging layouts and interactive experiences, Apple expects to motivate students to the iBooks textbooks experience. To enhance students' experience the books make use of: videos; 3D animations; interactive infographic illustrations, instant glossary terms access; instant search within the book; a search option can also be used to go to a given page; image galleries instead of single pictures; lesson reviews with interactive tests and quizzes with immediate feedback; highlight and note-taking; "study cards", with notes and glossary terms, with two sides, using contextual notes on the back of the card, and they could even be shuffled in random order; and the books are fully integrated with iBooks Store where students can find screenshots.

The iBooks Author is a free Mac application that enables authors to create any kind of digital interactive book. From the most relevant features can be singled out: Apple designed templates; special objects like book cover, glossary and table of contents; simple drag-and-drop feature to add media; import documents produced in other applications like Word, using also drag-and-drop features and iBooks Author automatically detects formatting, sections and styles; multi-touch widgets tool with pre made interactive objects that authors can add; Keynote produced resources integration; creation of custom content writing interactive resources using JavaScript and HTML5; multimedia glossary creation tool; and instant build and deployment to iPad.

4.2 Barnes & Noble NOOK Study

NOOK's solutions from Barnes & Noble are more than tablets devices (Simple Touch, Color and Tablet). It has a reading application distributed for PC, Web, Mac, iPad, iPhone and Android.

NOOK Study is a free application, directed toward students and instructors, which delivers eBooks and e-textbooks, compiling all the study materials in one location. Using the "My Library" NOOK's module, users can create courses, name them and select a course icon for easier identification. Among other typical features NOOK Study allows: single and dual page view, and a remarkable "dual book view" (comparison mode); cross link navigation, copying a page link on a platform and pasting it on the Web browser will display the same page online; highlighting and notes options allows different colors tags, "asterisk" to mark relevant passages, and "questions" tags to question instructors about; "word lookup" is a function embed on platforms that searches on Google the definition of a selected word. The print options of NOOK Study allow to export highlights, notes, "asterisks" and "questions" to Word document format (with table of contents), or Notepad.

4.3 CafeScribe

CafeScribe offers a digital shop to buy digital textbooks but the most valuable feature is the reader application that works online and offline. CafeScribe reader presents a "bookshelf" with quick access to bookmarks, notes, summaries and book info about copy/past and print limits (because books are covered with digital rights management policies). The main tools, like almost all eReaders, are the search, bookmark, highlight and note taking tools. For the highlight tool the reader has a unique feature, in which a student can add or change colors and tags, so they can easily correlate each color to the subject/tag they need. In the notes section the student can add notes and make them public (sharing with others from the same institution community) or keep it a private note for personal use only. Members of a community share notes about a textbook and they can be accessed at any time at the platform when reading a book, and the note is shown along with the specific page of the book. Another interesting

feature is the search option that retrieves two different ways of viewing the search results: organized by page order or instances per page (suggesting the more instances on each page, more relevant search results). The "snap summary" function is another singular feature, which condenses notes and highlights them allocating them into one place for further viewing and printing, with filter options, acting as a study guide.

4.4 Cengage MindTap

MindTap is described as an agnostic device, personal learning experience platform that combines all students' and instructors' assets, readings, multimedia activities and assessments into a singular learning path to improve student outcomes. It is a cloud based solution designed for students and educators alike with a range for two and four year colleges and universities as well as other higher education institutions. It allows them to access their learning from anywhere on any device.

The central concept is the "follow path". The learning is organized into a "learning path", and "path" is made up of "learning units". Following a learning unit students find it is made up of "learning activities", and then students must go in order through the activities which have been designed by author experts and Cengage Editorial Teams with the objective to improve concept comprehension and retention. The learning activities could be a video, a quiz or test, a project or reading, or even a document inserted into the learning path by the instructor. The instructor can personalize both learning units and learning activities and instructors can assign due dates, orderly activities, adjust the names and descriptions of the activities, adjust grading strategies in values, and even change their order placing them earlier or later in the learning unit; all these operations can be done via menus in the platform interface.

The MindTap reader is a built in module that is described as providing more than just text learning for the student, with embedded media like video, animation, audio and exercises, among other things. The reader includes other features that are intended to keep students focused on learning, including inline glossary, simple navigation using links and page-by-page turning. For instructors it allows them to put documents like

Word documents, presentations, spreadsheets and other personally created content in the reader wherever they choose. Instructors can also add these items as stand-alone learning activities. The reader module not only allows for instructors and students alike to easily highlight in four different colors and take notes, but it also aggregates all the notes in the notepad which is located in the sidebar of the application. In addition to the notepad it also has a "full book app", it is a Google Docs third-party application where the instructors supplement documents can be found; a "flashcard app" for most titles, and a "view progress app". Third-party services like lecture capture software, online tutoring services, and social media environments can be run within MindTap.

4.5 CengageBrain & YouBook

CengageBrain (formlerly iChapters) is presented as an intelligent online bookstore and digital learning center that provides students a way to buy, rent or access textbooks, "eChapters" (product from Cengage that is basically a way to access/buy chapters from books), e-textbooks and study tools. It can be used also in mobile devices and students can access content also in an offline mode.

Cengage YouBook is described as a chemistry eBook easy to customize that integrates mechanism animations, links to videos and other interactive media. The reading platform has a media menu that allows one to launch specific tutorial assets that are also linked throughout the YouBook. From there students can navigate by chapters to find all the related media assets that appear on the page side marked with media icons. Instructors and students have different privileges with respect to organizing and changing content. The student version has a student discussion board that works like an instant messaging application, and it can be recorded for future reviewing; instructors can participate in discussion too. For the instructors there are also some interesting features, like remove or rearranging chapters order; sharing highlights with students; embedding videos directly into eBook; changing text passages or striking it out with an editing tool.

4.6 CourseSmart

CourseSmart is a platform for students and instructors and claims to have the largest collection of e-textbooks and digital course materials, and also to be the first platform to implement HTML5 for offline technology for e-textbooks. However from the student's point of view the platform is very poor, as it only provides a reader module with a few important features: zooming without losing quality; side-by-side, continuous and thumbnail view mode; course notes on text with text formatting; one-click bookmark page; resources update tab for viewing any resources updated by the publisher.

On the instructor module the "bookshelf" is populated with all subscribed books and instructors can access a print process. When reading a book, instructors are able to: select and highlight the text; find highlighted sections and navigate between them; create notes on pages; search features with highlighted search words; share pages by link or send by e-mail; print pages with zoom in and out options. The process for offline view is processed by a check out method, with at 5 minute per chapter wait for compiling and downloading action. Each book is obligated to digital right management (DRM) restrictions for offline use.

4.7 DynamicBooks

DynamicBooks is a platform directed to instructors and students and accessible for online or offline using VitalSource Bookshelf reader application. From its key features it is relevant to mention: "Instructors can re-arrange chapters, highlight sections, add animation, audio, video, website links plus add their own content such as course notes or equation problems. Students can take notes, highlight, share notes with friends, search text and take online tests or solve equations created by their instructor. Students use their own preferred computing device, such as a laptop or Apple iPhone." (DynamicBooks, 2012).

4.8 Flat World Knowledge / MIYO

Flat World Knowledge is a textbook publishing company. They offer free books (Creative Commons open license) written by leading experts with peer review, and supported by test banks, instructor manuals, lecture notes and print desk copy.

MIYO stands for Make It Your Own and is a platform directed to instructors providing textbook editing solutions where they can: move sections or add custom sections to textbooks, edit or delete; reorder the table of contents; edit pieces of body content at the sentence level; insert paragraphs, annotations, learning objectives, exercises; upload Word documents, PDF files and video clips; toggle between edit and reader mode; produce costume URL for the free online book sharing; publish in multiple formats alternative to the free online textbook, like full color textbook, black & white version, "print yourself" option (PDF) or other eBook format, and MP3 audio books.

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4.9 Ingram VitalSource

VitalSource offers a wide pack of platforms: Bookshelf (e-textbook platform); vPage (e-book application); vLessons (e-whiteboard applications development); and FLOE (Flexible Learning Object Editor to create HTML5 learning objects based on XML).

VitalSource Bookshelf platform is distributed either in desktop, or online and mobile versions. The platform supports rich media and interactivity; highlighting passages, notes creation and searches through them, providing "following" friends and teachers subscriptions; search options by words and/or pictures, student notes or even friends and teachers notes; accessibility for impaired students and supports content from all the major education publishers.

vPage platform provides interactive learning objects, read-aloud text to voice synchronization, and teacher customizations. vPage e-textbooks take full advantage of cloud computing and can be easily integrated into websites or learning management systems, both via PC and tablet devices.

Wiley Desktop Editions use VitalSource technologies to provide access to Wiley e-textbooks.

4.10 McGraw-Hill Create & Connect

McGraw-Hill has two different platforms: Create and Connect. Connect is a digital learning platform for the higher education market accessible on personal computers and mobile devices. It connects students and professors to a range of engaging interactive content in a personalized model where students have individualized learning plans. Tests, quizzes and chapter books are all related along with images, videos and other interactive content. Instructors can track each student and classroom visual reports and can provide early intervention to students who are at risk of failing.

Create is self-service platform that provides instructors to create custom course materials, as digital textbooks, combining various types of resources. Create lets instructors select any content and any media and later rearrange the content. At the end instructors received the electronic version but they can also request a paper version of it.

4.11 Pageburst

Pageburst is a platform, a digital textbook library, from Elsevier publisher and is directed toward instructors and students, accessible on multiple devices. It provides highlighting, and can be used as a notebook (it supports direct note sharing), and reference guide; and as also a valuable feature of social network interaction between instructors and students, exchanging messages and materials.

4.12 Pearson MyLab

MyLab is a platform from Pearson publisher, described as a free platform for educators and students that enables personalized learning and improves results. The platform is organized in courses and has a distinctive option, a help module with support at all time. Inside a course, students have a course sidebar and announcements from the instructor. In the course sidebar students have many features: they can access a course calendar to see the next assignment due date; a study plan where students make a pre-test to build personalized study materials based on the test results; eBook and chapter audio lets students read the textbook, highlight and take notes, and they can listen (text-to-speech) chapters; multimedia library gives students a database of animations, simulations, videos and other materials; the student resource section offers study guides with quizzes and chapter reviews, and flashcards among other resources; student grading using the results of the tests on the platform; and a communication module where students can participate in discussions by live chat with class or e-mail embed feature to contact instructors.

4.13 Wikibooks

Wikibooks is a project for collaboratively writing open-content textbooks that share all the main characteristics of the best known platform of Wikimedia. "Contributors maintain the property rights to their contributions, while the Creative Commons Attribution-ShareAlike License and the GNU Free Documentation License makes sure that the submitted version and its derivative works will always remain freely distributable and reproducible." (Wikibooks, 2012).

4.14 Xplana

Xplana is auto-defined as an innovative social learning and digital content distribution platform. This solution is slightly different than most because it focuses on students, institutions, and publishers. For students the platform offers multi-device access (also providing Android and iPhone applications); creates course materials; access to

Xplana's eReader. This reader has a particular function of instant rotating pages, besides the usual functionalities like taking notes and highlighting and search content. It also has a downloadable version for offline experience and support rich multimedia; practice activities; and comments and ratings. Students can also create flashcards; form study groups in order to collaborate with classmates or connect with other learners with similar academic or personal interests; upload course information and associate specific course content including syllabi, notes and handout, and then add resources from digital content library; organize learning materials; networking with friends online using the inbox messaging function; and share with social networks like Facebook and Twitter.

For institutions Xplana emphasizes the personalized home space for student organization; associate materials with school's courses; free learning assets including Web pages, videos and audio clips among others; content creation tools; albums within courses; collaborative study groups; and communities to connect students with colleagues.

For publishers Xplana underlines their hosting in a secure data center with redundant access; eBook production tool that converts existing content to XML-based content and ePub format; management tools for uploading, tagging and displaying; prepares content for commerce services; digital rights management (DRM) permissions; sales channels connected to online bookstores databases and university bookstores for print and digital adoptions; and e-commerce solutions.

5. **ANALYSIS SUMMARY**

Fourteen platforms were analyzed, excluding variations, and what should be emphasized is that there are common functionalities across all platforms: highlighting, taking notes, bookmarks and search options. However, there is, in almost all analyzed platforms, unique features and solutions that can be combined in future solutions, but above all it is important to retain some indications that can help foresee the direction of future developments in this field.

One previous note should be made regarding the Apple iBooks and iBooks Author applications, since they represent example of producing and experiencing multimedia interactive content for educational purposes. In this domain all features are remarkable and above all they are free to download and use. Nevertheless, they do not completely contend with the majority of the platforms analyzed because they lack the need to be curriculum oriented.

Regarding the other platforms there are some features that need to be addressed and highlighted: the "asterisk" to mark relevant passages, and "questions" tags to question instructors about; "snap summary" function that condenses notes and highlights into one place for further viewing and printing, with filter options, intended to perform like a study guide; embedding Google Docs third-party application; instant messaging application; sharing highlights with students; zooming without losing quality; "following" friends and teachers; read-aloud text to voice synchronization; social network interaction share with social networks like Facebook and Twitter; study guides with quizzes and chapter/lessons reviews; live chat with class or e-mail embed feature to contact instructors; collaborative study groups; flashcards/study cards; search results organized by page order or instances per page (suggesting the more instances on each page, more relevant search results); and "dual book view" (comparison mode).

From the technological point of view some references such as those using HTML5; XML-based content and ePub format should be mentioned. The investment in these technologies will enhance greater independence over the devices and will enable greater interaction between resources and other platforms as on learning management systems.

6. CONCLUSION

At the beginning of the present work it was believed that there were so many differences between platforms and digital textbooks that it would be inevitable to analyze only digital textbooks. However, the research has shown that it will be more

appealing to understand why platforms have so much relevance to educational systems, where they are utilized more such as in the context of the U.S.

As new technology for mobile work emerges, studies are needed to assess not only the tools and the pedagogical contexts in which it may be used, but also the attitudes surrounding its adoption (Brand, Kinash, Mathew, & Kyordyban, 2011). It will be important to analyze how textbooks are used in student learning and try to discover what features of books are useful. This information could be used in defining the new paradigm of the electronic textbook and planning how to structure it. Researchers need to start looking at different formats of electronic textbooks; understand what features and capabilities will enhance the student's experience; and explore strategies that will allow students to learn how to optimally use electronic textbooks (McGowan & Stephen, 2009).

According to Reynolds (2011a) there are some factors that will influence the success of digital textbooks: the cost of textbooks and other learning materials; the availability of digital textbook content; the continued growth of for-profit institutions and online learning; the increased popularity and availability of OER (Open Educational Resources) and open digital content; and an increase in digital-first publishers and open textbook movements. There have also been significant announcements in the last year related to OERs and open textbooks. In particular, several state-specific and institutional initiatives are making OERs and open textbooks an increasingly viable option (Reynolds, 2011b). Despite a relatively high level of familiarity with open textbooks, the adoption of such materials for their classes is quite limited. Nicholls (2009) states that a distinct gap between awareness and practice in textbook selection needs to be narrowed, and therefore the circulation and adoption of more affordable textbook options should be enhanced.

At the technical level HTML5 is starting to consolidate its position, probably because of Apple's resistance in supporting Adobe Flash animations and resources. To the future success of e-textbooks content format standards emerge and become adopted by the publishing and software players in the market. EPUB 3 standard appears to be such a standard (Chesser, 2011).

Some researchers say that should be examined teachers' acceptance of digital textbooks, their skills for using them, their perceptions about their pedagogical value, and their other views and observations regarding the usability of these tools in order to incorporate the findings into the development of new user interfaces; and to examine design principles with a specific theoretical underpinning, so the findings could be more consistently applied in the design of user interfaces (Lim, Song, & Lee, 2011).

Milone (2012) believes that in the coming years, we may even see a migration away from the trivial reading of tweets, posts, and such, to more substantial texts, including the classics, many of which are available for free via e-readers. If this happens it will have been worth investing so much money, time, and resources into this cause, because reading is very significant for the learning process.

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