MYTHS, LEGENDS, AND TRUTHS OF E-TEXTS IN EDUCATION

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Abstract. Electronic books, or e-books or e-texts, offer students, teachers, and schools an additional medium or tool of instructions that can support or enhance the learning process. The use of e-books or e-texts is found at all levels of education. Using this electronic media in the classroom is a new paradigm that requires training and familiarization of students, educators, and parents. As with all books, there are various types of materials available to meet students' knowledge, characteristics, abilities, and interests. This paper examines the challenges, and opportunities of using electronic learning in the classroom in static and dynamic forms of e-learning.

Keywords: e-learning, e-books, e-texts, teaching and learning, readers, e-books design

Introduction to e-texts and e-learning

The interactive e-textbook or e-book that is being introduced is one of the most heralded events of the classroom today. It is bringing much promise and learning potential in an area that is threatened by politicians, economics, and society. The e-book is defined as the paper book being converted to the digital format using a scanner or typing to make it possible to be displayed on the computer (Lee et al., 2015; Tuah et al., 2019; Lai, 2016). The origin of the

electronic book goes back to the 1960s. It was first described as "a text analogous to a book, that is in a digital form to be displayed on a computer screen (Maynard & Cheyne, 2005) In early 1992, the phrase "Electronic Book" (the e-book), was widely referred to a media using electronic channels to store and transport various information and multimedia (Tuah et al. 2019; Lai, 2016). The Oxford Dictionary of English defines e-books as "an electronic version of printed books". However, e-books can and do exist without printed equivalent form (Tuah et al. 2019). There are two types of e-book platforms - *static*, which the text is not interactive, generally PDFs or similar formats of scanned artifacts of original pages, and materials. The second is the reflow-able digital textbook that uses a flexible formatting system that is paginated for a dynamic format. The reflow-able digital format allows for interactive features to engage the student with dynamic media, hyperlinks, discussions, simulations, and interaction with others (Jhangiani et al. 2018). Furthermore, results show that students using the print format or static format perceived its quality to be superior to the commercial textbook. Students that were assigned to an e-text format performed either no differently from of better than those assign to a commercial textbook. These results are consistent with previous research; the existing literature supports the conclusion that the cost savings to students or schools do not come at the expense of resource quality or student performance. Jahangiani et al. (2018) noted that reading fluency was slower in the reading group that used the reflow-able text but noted that the comprehension level was the same.

The costs of printed textbooks are accelerating the move to e-texts. The cost of standard textbooks in the United States rose by 127% between December 2001 to July 2017. Because of this, students are not purchasing their textbooks. In Canada in 2017, a study of 320 post-secondary institutions, 54% of students do not purchase their texts (Jhangiani et al., 2018). The high costs of printed textbooks and with students experienced in accessing the internet for information for current and free access to information is further advancing the case for e-books. The influx of instant and free access to information has changed

the dynamics of the classroom. The set of out of date encyclopedias that were once the student's primary source of information is no longer. E-texts and e-learning are dynamic, allowing students access, multitasking and internet access to information. Students today want their smart-phones and tablets streaming information. (Maynard & Cheyne, 2005; Knight, 2015). Students are now "prosumers, they are communicating with the manufacturers what they want and how they want it presented to then. They are not demanding only change, but they are the change elements that are guiding and adapting the media to education and their specific requirements of education" (Knight, 2015).

Vorotnykova (2019) describes this influence by the move to greater globalization, the development of the information society and knowledge society promotes SMART-Education and requires a change in the content of education. The development of new techniques for the creation and use of e-learning content is rapidly evolving and becoming more diverse in the form of presentation. These changes will require fundamental changes in pedagogy. Teaching and learning by students are becoming personal, networked and adapted, using accessible and open content. This new paradigm of the classroom will present significant benefits of using e-books as textbooks in schools, and this is a new paradigm, especially for developing countries. E-books are different in terms of content and design, but all of them should meet the needs, abilities, interests of students and consider the level of their knowledge in the diverse classroom of learners.

Applications of e-texts

The introduction and implementation of e-books must be carefully thought out. The paradigm of using printed texts to teach from is firmly entrenched in education. The success of the e-text is very much dependent on the instructors' play acceptance by modeling active use of the text in the classroom (Abaci et al., 2015; Embong et al., 2012; Maynard & Cheyne, 2005). The learner must believe that the e-texts are current and valid to be considered a legitimate

source of information (Knight, 2015). Today's learners are impulsive, have shorter attention spans, require rapid responses and many have an unconcerned approach to assessing information sources. To provide inclusive education, it is necessary to use e-textbooks that take into consideration the peculiarities of teaching students with special needs, for instance, visually impaired ones. An e-textbook that contains two subsystems: writer (comprising various categories of interactive exercises) and reader (providing multimodal interaction, having search functions, marking, suggestion repetition, comments from users, activity record, and context-sensitive help for the dual user interface) can be an example (Vorotnykova, 2019). To have a successful e-text in the classroom the views of teachers, students and their parents on the feasibility of using e-textbooks and e-books from a certain age and their impact on the success and health of children still require being studied. An additional analysis of the use of the concepts of "digital textbook", "e-textbook", "e-book" needs to be made to determine the opportunities, advantages, and disadvantages of using these tools at school. Current technology has made it possible for teachers to prepare their texts in their offices to meet the specific needs of their students (Jhangiani et al., 2018; Knight, 2015). Therefore, the inclusion of the classroom educator in the development of the e-text is essential. The development of the e-textbooks industry has been widely reflected in scientific research on the effectiveness of their use, but the definition of organizational, psychological and pedagogical conditions for the use of e-textbooks and e-books at school remain beyond the attention of researchers (Vorotnykova, 2019).

Many education institutions have tried to implement e-texts in their curriculum with varied success. One of the success stories of e-books refers to the e-book project of Clearwater High School, 2010, which replaces print textbooks, with e-books. It is a collaboration between the school and Amazon Kindle. In this project, e-books are fully loaded with the contents of subjects taught and become the main textbooks Amazon Kindle also equips all 2,100 students and 100 teachers at that school with e-Book readers in electronic formats to access

books, newspapers, and magazines. The Kindle allows students and teachers of the school to search for word definitions, bookmark pages, highlight text, and type notes. Before this project, they needed to scribble on pages of a hardbound print book to do the same tasks (Embong et al., 2012).

To implement an e-text in existing curriculum, instructors must offer valid reasons to their students and parents for adopting e-texts: (i) the students must be guaranteed access to the e-text at the beginning of the semester; (ii) the student will be able to share highlights and notes with the instructor and class-mates; (iii) how will the e-text be used in class and its features are taken ad-vantage of; (iv) will the instructors take advantage of the ability to monitor stu-dent engagement and communicate to the students (Abaci et al., 2015).

Abaci et al. (2015) state that adoption of the e-text in the program must meet the following objectives: (a) e-texts must bring down the cost of materials for students (Jhangiani et al., 2018; Embong et al., 2012; Knight, 2015); (b) the e-texts must provide high-quality instruction, easy to update and relevant to the readers (Vorotnykova, 2019; Jhangianimi et al., 2018; Embong et al., 2012; Knight, 2015); (c) the e-texts enable the use of new tools for teaching and learn-ing (Vorotnykova, 2019; Jhangiani et al., 2018; Embong et al., 2012; Knight, 2015); (d) the policies concerning e-text teaching and learning are shaped by users and stakeholders the terms of sustainable models that work for all parties involved. (Embong et al., 2012).

Advantages of using e-texts

The use of e-text carries several advantages. First, from an ecological standpoint they are environmentally friendly. The shift to e-texts from printed books according to Conserveatree[1)] over 1 billion sheets of paper or 120,000 trees could be saved from paper mills.

E-books benefit students: physically, academically and psychologically. An e-book reader can compress the contents of several conventional textbooks in a single text-reader, or a laptop computer. Students are typically required to

bring several textbooks to schools daily, a single e-reader or laptop computer could lighten the burden. Physically, the reduced weight reduces the risk of damaging effects such as lower back pain, poor posture, and spinal deformity over time and back problems in adulthood (Edgecomb et al., 2014; Embong et al., 2012; Anderson, 2007). Anderson (2007) discovered in a study of nearly 400 students that students carried their school backpacks daily and often between classes as well, and it caused a constant additional pressure to the spine that can result in long-term damage. Furthermore, Anderson found that students walking to school are more prone to back issues. Vorotnykova (2019) reviewed in a study conducted in Kyiv, Ukraine of 352 students, 296 teachers and 357 parents about concerns about the negative impact on the health of children. The result from the survey yielded: 17.1% were unsure, 12.4% thought e-books were hazardous, and the majority, 70.5%, is sure that there is not a threat. The main concern of the respondents was safety for the user's eyesight. These concerns are being addressed by the reviewing and engineering of hardware products to improve the ergonomics (sanitary norms of using e-textbooks to protect students from the negative effects of devices on their health).

In terms of learning, Embong et al. (2012) documented students that who engage in e-books found the reading of the e-texts to be fun due to their attractive features (i.e., user-friendly functions; attractive graphics; enlarged text size; plug-in speakers). Because e-books offer several advantages over printed books, i.e.: an e-book is easier to carry anywhere, can be read anywhere and anytime, e-book prices are relatively cheaper when compared to the printed version. Furthermore, interactive e-books have the potential to transform learning from the acquisition of basic facts (i.e. printed material, didactic lectures, PPT) to actively acquiring and applying knowledge and skills because it includes multimedia and interactive learning (Tuah et al., 2019). Students engaging in e-texts are observed to be active, collaborative creating richer learning that allows students to take notes, underline and look up unfamiliar words (Knight, 2015; Maynard & Cheyne, 2005; Norman & Furnes, 2016).

Vorotnykova (2019) reported in her studies of Ukrainian students and included parent responses that the embedded features of an e-book, encouraged student participation. The respondents identified the main criteria of e-textbooks: high-quality image (76.7%), ease of use (73.6%), the ability to update the content (63.6%). On the question when it is appropriate to introduce students to e-books, Vorotnykova (2019) found that parents who agreed on the necessity to use e-textbooks, the majority were in favor of introducing them to 10-year-old students (35.5%). 22.6% of the respondents agreed that e-textbooks can be introduced from the age of 6, and only 14.5% - from the age of 16, others believe that any age is acceptable.

After the introduction of e-textbooks in experimental groups, the opinion of parents remained similar: 36.4% of them indicated that the most expedient age to introduced children to e-books and e-textbooks from the 5th grade. A recent survey in April 2016 over 2,000 school administrators in the United States reported that 80 percent of schools using digital content, and over 40% of teachers are using e-books as part of their curriculum[2)] (Tuah et al., 2019).

Educational applications of e-texts

For e-books to succeed in the classroom it is the teacher that provides the learning environment that integrates technology for student use. Modern technological advances give teachers access to differentiated material and allow them to model active use of the text (Jhangiani et al., 2018; Ogata et al., 2015; Maynard & Cheyne, 2005). The e-book allows the incorporation of digital technologies into innovation and transformation processes, and enable teachers to develop and manage the learning environments to allow students to attend virtual classes, museums, use on-line sources and online tutorials from many sources at any time of the day or night; the world becomes the classroom for the student and the teacher becomes a mentor and a learning facilitator (Ogata et al., 2015; Abaci et al., 2015). Lokar (2015) describes the desirable characteristics of a good e-textbook to have the following: (a) availability on the Internet; (b)

adaptation to the needs of teachers, and students; (c) cost efficiency and productivity by reducing the time and money spent on creating, and future changes and adaptations; (d) adaptable to technology changes without redevelopment and transcoding costs; (e) the ability to use different tools in different learning environments; (f) the use of parts of the e-textbook in different contexts.

A good e-textbook should be quite different from a printed textbook. It should provide more besides the obvious additions and improvements such as interactivity, multimedia, and ease of navigation. For example, the resource for creating e-books and e-textbooks is the Lightbox multimedia educational platform that allows you to embed videos, audio files, slideshows, Google maps, weblinks, etc. in the materials for a specific topic. It is a fully interactive, multidimensional, additional solution for students who seek to improve communication skills and literacy (Vorotnykova, 2019; Tuah et al., 2019; Abaci et al., 2015). Finally, e-books can be used by educators to monitor student usage of the books, and their academic achievement on demand (Embong et al., 2012; Knight, 2015). Some e-books allow students to adjust the font and a speech function that reads aloud for the visually impaired.

Vorotnykova (2019) found that the teachers identified the need for using the e-textbooks and the need to adjust them to their student's learning requirements. Teachers' would report adapting the e-texts to their methodological materials, which they can control and assume responsibility for the structure; updating and implementation of the educational process helped the teachers to acquire both the experience of self-replenishment, renewal of professional knowledge, personal involvement in this process, responsibility for it, and opportunities to manage their resources. Educators found that they could adjust their e-books for individual approaches towards each student as each e-textbook would allow for customization and personalization for their students. Customization will be one of the most important parts of the teachers' duties in the future as they meet the legal obligations to educate each student to their specific needs. Teachers are the ones capable of making the proper combination of resources,

making it suitable for a pedagogical situation. Therefore, e-textbooks should be designed to be adaptable to the pedagogical situation and the user, be it a learner or a teacher. Consequently, e-textbooks will be different from the printed editions of e-texts (Lokar, 2015; Norman & Furnes, 2016; Embong et al., 2012). This new teaching environment will create a new information and education environment with e-books and e-textbooks that will encourage students to network and collaborate with other members of the learning community. It also presents a greater opportunity to develop distance education and self-education.

Even though students generally have a positive experience in using e-texts, Tuah et al. (2019) research showed that e-book readers are currently loaded with curriculum and article-based e-books that cannot, to the fullest, provide an effective learning experience in higher education. Students report unsatisfactory aspects of the e-texts for active reading. The electronic platform (hardware and software applications) can greatly influence the success of material availability. The interaction with texts in the form of comments, highlights, annotations, and non-linear readings is difficult for the student. In has been observed that some students using digital materials can influence overconfidence in reading comprehension in several studies, but much remains to be studied (Vorotnykova, 2019; Jhangiani et al., 2018; Tauh et.al. 2018; Norman & Furnes, 2016). Edgecomb et al. (2014) reported individual case studies to show dramatic improvements with the use of e-texts with proper implementation. Research reports and observations of students using the reflow-able e-texts show that students like using the visual aids from the e-texts and showing specific details of the e-text on projector screens (Vorotnykova, .2019; Abaci et al.,2015; Knight, 2015).

Despite the drawbacks, students report to their teachers that having access to on-demand resources is exciting. Students, parents, teachers, and administrators agree that portable e-reader devices such as tablets make reading more enjoyable. With e-books and their application being added to the curriculum, students and teachers need to work together to navigate this technology inside and

outside the classroom. Interactive professional development sessions by the e-text/book publishers for teachers, parents, and students will be needed to guide everyone to understand how to use this new technology. The study of the views of parents and teachers at the first stage of implementation of e-texts at the k-12 education level in Ukraine revealed by Vorotnykova (2019), Tauh et al. (2019) in Asia and the United States by Ivashina[3)] in general, respondents favor the replacement of printed textbooks by electronic ones. More than half of parents (58.1%) are interested in innovations. The obtained results testify to the mixed opinion of teachers about the transfer of all schools to electronic textbooks. Although the majority (55.2%) of teachers are more likely to approve such a changeover, their opinion is uncertain, because the number of teachers who fully endorse such a decision is 0%. More than a third of teachers and educators (36%) do not approve the idea of switching to e-textbooks. For 73.2% of respondents, it's important to use e-textbooks free of charge and to receive proper training to successfully use the e-texts with their students. Previous research indicates the success of new paradigms in education requires professional development for educators (Jhangiani et al., 2018; Abaci et. al., 2015). Overall findings showed that e-books if implemented properly promote student learning experiences by enabling student involvement and interaction between the learner, teacher, and media (Tuah et al., 2019).

Integration of e-texts in online learning

Edgcomb et al. (2014) indicate in studies with high confidence that interactive e-texts do improve student performance in flipped and active learning classrooms. Classes that used the interactive texts, with an active classroom, students experienced better class enjoyment, improved attendance, better attentiveness, and improved awareness of one's time. One criticism of the flipped and active classroom was that more time is focused on less material. Interactive textbooks are well-suited to before-class assigned readings. E-texts do support

on-line coursework as they supplement the course and provide structure in place of the face to face classroom dynamics.

Conclusion

Students, teachers, and parents have confirmed their readiness to use e-textbooks and e-books under the conditions of material and technical provision of educational institutions, observance of sanitary norms, and development of their digital competence provided by the publishers and information technology support teams of schools. Digitalization has increased the need for student digitalization competence and students' ability to engage in self-regulation of their learning (Norman & Furnes, 2016). Online learning and e-texts signify a new form of education the transcends boundaries between formal and informal education in a paradigm shift. By understanding the evolution of the e-book, and its role in education we can better embrace and implement it in our classrooms. To better understand the process of implementing the e-book Vorotnykova (2019) has identified four basic conditions for the successful introduction of e-textbooks and e-books at schools: (i) educational policy (state, regional, educational level) on the introduction of e-learning, e-textbooks, financial support for the purchase of e-textbooks and support of software; (ii) logistics and methodological support - the availability of IT infrastructure in an educational institution for the introduction of e-textbooks: hardware (netbooks, computers, tablets, e-books), the Internet access, the availability of local area network; software; support services for updating e-textbooks, installing them on the device, providing data protection and copyright; educational and methodological support (e-books, e-textbooks, educational-methodical complexes, methodical recommendations on the use of hardware and software, e-resources of best practices); (iii) ergonomics; (iv) the readiness of educators, students and parents to use electronic devices with appropriate support from publishers and information technology staff from their schools.

The emergence of e-books as textbooks among school children at all levels of education requires all parties (i.e. teachers, technologists, parents and even policymakers) to think how to adapt themselves to the paradigm using an e-book as a learning tool. While e-book will not replace print books soon, it will be used to complement print books. In classrooms, teachers and students will start to value the convenience and accessibility of e-book. Technologists can expand e-Book usage among many school children by creating awareness of e-book usability. Parents will be exposed to the latest development in education technology. Indeed, the introduction of the e-book in education could be a jumpstart in promoting high literacy for our students and higher academic expectations. I conclude that e-books get a positive response from the students. It is possible that in future e-books can be further developed in terms of their application, use, design, and content. The potential of this educational media has yet to be realized.

NOTES

1. http://conservatree.org/learn/EnviroIssues/TreeStats.shtml

2. https://goodereader.com/blog/e-book-news/80-of-us-schools-use-e-books-or-digital-textbooks

3. http://archive.chytomo.com/news/e-pidruchniki-v-shkolax-amerikanskij-dosvid

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