

E-Books in Teaching and Learning Process

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Abstract—The e-book is currently not so much used in the teaching and learning system, because there are still many teachers who like teaching and learning with the old method but do not rule out the possibility that in the future the e-book will be used more, because in this article the author reviews research studies on the use of e-books in learning by reviewing the evidence of several weaknesses and advantages of e-books. From the overall findings discussed, we conclude that e-books provide a positive response to students.

Keywords—*e-books; teaching and learning; readers; e-books design*

I. INTRODUCTION

At first, e-book is defined as the paper book being converted to the digital format using scanner or typing to make it possible to be displayed on the computer [1]. Electronic books have gained a lot of attention recently [2]. In early 1992, van Dam proposed the phrase “Electronic Book” (also called e-book), which was widely referred to as the media using electronic channels to store and transport various information and multimedia [3]. The Oxford Dictionary of English defines e-books as “an electronic version of printed books”. However, e-books can and does exist without its printed equivalent form [4,5]. According to Price Water House Coopers as one of the providers of business consulting services in the world, the book market is in a transitional phase in which the reader makes an improved level leaps of e-book use from paper books to e-book and e-Reader, this was based on surveys of experts in the field. Hence, it can be said that they are ready to make significant changes and revolutionize the book industry forever [6].

By using the right technology in the class can be a challenge for 21st-century teachers. Technology in class can appeal to educators. However, determining the benefits of technology and asking whether these benefits are greater than traditional teaching tools is very challenging [7]. One specific issue of technology educators currently being debated is that whether interactive e-books beneficial for students to learn than from the use of traditional print texts. The developers of the students experience a number of challenges throughout the design and development of e-book. Hence, this activity provides a very significant learning experience [8]. The book is considered the most important tool used to transfer knowledge and assess information and academic education programs since the invention of the printing press. With the development of electronic publishing facilities, global information, and easy

access via the internet, e-book becomes a more sophisticated tool to be used to transfer the knowledge [9]. Currently, e-book is becoming more favorable for many readers, from children to adults. This is because e-book offers several advantages over printed books, such as 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. Making interactive e-books has the potential to transform learning far from the acquisition of basic facts (i.e. printed material, didactic lectures, PPT) to actively acquire and apply knowledge and skills because it can include multimedia and interactive learning [10].

The majority of the e-book reading is still the same as traditional paper books. However, it cannot effectively help learners to improve reading comprehension [11]. One major drawback is the difficulty of accessing the e-book and manipulating the digital content [12]. The limitation Digital Rights Management (DRM) is often built on e-books to limit access to titles [13]. One of the obstacles that often hinder teens from using the e-book is the inability to share digital books with their friends. The reason is that many teenagers are social readers who enjoy exchanging books only with their colleagues [14].

This paper aims to complement the previous review of the use of e-books in learning. Reviews are indeed focused on the e-book, but it links the use of e-books to students and teachers. The purpose is not merely to discuss e-book in relation to teaching or learning goals, but also to discuss the use of e-books in a general context. This will help researchers and education practitioners to understand the context from e-book, especially in the education field. Therefore, we review the evidence of some weaknesses of e-books that still need to be addressed. Then, this article can help researchers to develop more e-book facilities so that they can be utilized in learning systems in the classroom.

II. E-BOOK IN CLASSROOM

The latest survey of behavior among business school faculty at Brigham Young University shows that 61% prefer books in printed format if they can choose. Ease of reading and portability are two important reasons for choosing printed form [15]. The electronic book actually has been around for more than 40 years, but e-books have a short usage period because there is always technology development. Hence, textbooks still have dominated the class for now. Maintaining affordable, up-

to-date and portable textbooks is a challenge. Technological advances occur quickly and accessibility to the latest and relevant textbooks is desired [7,16].

Right now, ICT companies are competing to develop the best and most advanced e-Reader [17]. The facilities of modern e-book can include animation, zoom in and out of the image on the screen, music, sound effects, highlighting the text, dictionaries built-in hotspot where readers can click to interact with characters or objects, translation of the foreign languages, and many others [18]. This is a positive impact for e-book users and a revolution in studies may occur in which a digital technology incorporated into e-books is an extraordinary multimedia tool that can promote the study of students [19]. For the student, e-books have the potential benefit to increase learning motivation, given the unique function such as the various search, copy-paste, and the spotlight that can be adjusted, which contribute to enhancing students' understanding and can remember a variety of information [20].

III. METHOD

This research uses empirical study method utilizing the knowledge, information, and instructions obtained from technology experts at the University of Indonesia to make the researchers or readers of articles more confident and knowledgeable about e-books in the education field. The e-book has become the mainstream in the world of technology, but it has not yet been fully and universally accepted, especially when it is delivered through platform solutions in the context of online libraries. This also includes identified issues in the literature [9,21].

This study analyzed content in 30 articles published in 2011 - 2018 regarding e-books. There are several steps that I have taken in selecting the articles, namely: the first stage, the article search is done online by using a free website from Google using the keyword search e-book. The searching period is done freely without time limitation. The second stage is to search for articles cited from several academic website databases such as ScienceDirect, IEEE, Taylor & Francis Online, IOPScience, and SAGEJournal. Database retrieval is based on trusted sources that already have more than 5 thousand journals.

Data search starts on September 8-14, 2018 with a free search on Google search using 'e-book journal.pdf' as the keywords, the journal will automatically appear on Google search. Based on some of the data that had been obtained, the researchers choose based on trusted sources and titles that correspond to the topic written by the researcher. On September 15, 2018, followed by searching articles on the database mentioned in the previous paragraph, the total articles submitted were 75 articles. Based on the 75 articles that have been analyzed and qualified by the authors, only 40 that have the closest relation to the topic of literature, 32 of the best articles were taken as citation materials for the author and 15 research articles were discussed in conclusion discussions.

IV. RESULTS

A. E-Book Readers Among College Students

Recently the e-Reader that was introduced has attracted so much attention, sometimes some people don't know that those who are in the market is not the first generation. The first generation was introduced in the 1990s for a bit of fanfare. Devices such as SoftBook readers and Rocket e-books are well documented in the literature, but not successful in the market. The latest wave of e-Readers began with the Sony Reader in 2006 and the Amazon Kindle in 2007 in which they enjoyed far more success. Barnes, Noble, and Borders have entered the market with Nook and Kobo, respectively, and Apple has introduced the iPad, a multifunctional device that functions well as an electronic reader [22]. E-Reader has little influence on word recognition and understanding compared to traditional text. These results can indicate that the e-Reader does not provide additional benefits for student achievement; therefore, printed books are superior in this field [23].

The conclusions from previous studies reveal that there is clearly more e-book readers than the supported marketing. In addition, e-book readers vary in the population of all available readers in the market. Respondents reported that there were certain desired characteristics:

- Portability of the reader;
- Having many reading titles;
- Ease of downloading titles;
- And having a word definition or available dictionary.

From the ecological point of view, e-book readers are still new and different species in competition with native species (printed books) and the conversion of continuing habitat types from printed book versions to electronic versions will depend on user preferences [24].

Research by Yin Zhang showed that the studies he did provide unique insights about user choices and preferences when reading books. In addition, e-books and e-Readers are rapidly growing and popular technologies that attract media and publishing companies. The findings of this study provide direction in understanding who adopted the technology and how it was implemented. The results of this study support the idea that e-books have firmly established a place in people's lives because of their convenient usage where they allow them to be able to access their favorite content anywhere and anytime [25].

Despite the fact that students generally have a positive experience in using e-Readers, our research shows 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-Reader with respect to active reading. Interaction with texts in the form of comments, highlights, annotations, and non-linear readings is difficult. This technology is still immature for serious study in the academic environment.

The main results of Arthur N. Olsen's research show that student preferences are still in line with what other researchers have found. Students still seem to prefer printing on paper as the main delivery mechanism for text as part of their education. Current technological infrastructure such as e-Readers and content has not yet functioned like traditional print media. These results are also related to work habits and how familiar the current generation of students is by using e-Readers. Our study reports the subjective point of view of participating students who are relatively inexperienced e-Reader users. In this study, the iPad received a better score than the Kindle DX for recording and highlighting. Students also report that many of them took the iPad to study class. This may indicate that there is potential for this device to function as an effective learning and reading tool in which it must be thoroughly investigated again [15].

The last one is the research by Laura E. Hibbard where students showed excitement by having access to the e-book world because they often visited the site and clicked on the title. Students report to their teachers that access on demand to popular literature is very exciting. However, that attraction soon fades when children become nervous and cannot read from a stationary computer screen. Students, parents, teachers, and administrators agree that portable e-Reader such as tablets will make reading more enjoyable. With the advent of e-book and e-Reader, the curriculum needs to reflect the novelty of this device. Students and teachers need to work together to navigate the most appropriate way to use this technology both inside and outside the classroom. In addition to being only involved in professional development session, teachers need to hold discussions with their students to understand what works in finding students in reading for pleasure through e-books [26].

B. E-book in Teaching and Learning

In the research by Bjarne Skjødt Worm, it was concluded that e-learning with cases provided significant results better than e-learning only with textbook material (at the same level) when learning with complex knowledge and looking at the acquisition of knowledge. Based on these findings, it had been obtained that for Problem-Solving, e-Case groups reached a level of knowledge comparable to classroom teaching, while learning with textbooks was lower than e-Case and teaching in class ($p < 0.01$). The textbook group also spent the least amount of time gaining knowledge (33 minutes, $p < 0.001$), while the e-Case group spent more time on the subject (53 minutes, $p < 0.001$) and significantly more entry into the system (2.8 vs 1.6, $p < 0.001$) [27].

Chih-Cheng Hsiao put forth some research results entitled the use of interactive multimedia e-books to study blood cell morphology in pediatric hematology. The method used was by gathering 51 participants from 3 medical schools in Taiwan. It was then divided into two parts, 25 people who participated in the apprenticeship were allocated to run training with PowerPoint Atlas and 26 people were allocated to run training with interactive multimedia e-books. The findings of the study showed that there was no difference in the pre-test scores between the TPP and IME groups (mean score of 27.0 versus 27.9, $p = 0.807$). However, interns in the interactive multimedia e-book group achieved much better scores in the

post-test than those in the PowerPoint group (mean score 103.2 versus 70.6; $p < 0.001$). The overall results of interest, motivation, and effectiveness were very positive in the multimedia e-book groupie [10].

All students enrolled in the first year in a university in Western Australia, Child Development for Educators, were invited by email to complete the online questionnaire. About 1,200 first-year students were sent an invitation via email to complete the online research questionnaire, the research findings from Genevieve M. Johnson showed only 199 or 16.6% answered and responded to the delivery. Collectively, the results support the conclusion that educational students who receive emerging technologies such as e-books and those who read e-books in their spare time consider themselves to be more capable learners than students who did not accept new technologies such as e-books and those who do not read to spend time on vacation [28].

In a previous study, Eeon Lim conducted a research study that aimed to explore the usefulness of future generation e-books (NG-e-books) with annotation skills and so on focusing on using e-books to promote student learning through reflection and sharing ideas. Thirty-six tertiary level students from 3 diplomas participated in this study. The overall findings showed that NG-e-books promote student learning experiences by enabling student involvement and interaction. The researcher suggested that the direction of future research should be related to the use and utilization of e-books in educational contexts [29].

C. E-book Design

The research by P. I. aimed to implement a Decision Support System (DSS) to assist libraries in choosing the best e-book providers based on their preferences. The way DSS works by comparing the importance of each criterion and condition of each alternative decision. SAW is quite simple, fast, and widely used DSS method. Simple Additive Weighting (SAW) is one of the simplest but most reliable methods and has been widely used in decision support systems. Atmojo et al. This study uses 1 cost criterion: price and 8 profit criteria: digital rights management, content, provider type, business model, license, technical support, resource capabilities, and customer support. An alternative is used to show how SAW works in eighteen alternatives. From the implementation, it can be concluded that SAW manages to rank all alternatives. For further research, they will combine other methods to get the weight of each criterion and work with sub-criteria. The author also concluded that there were several other similar studies conducted by Haswan who used SAW for the selection of members in the Civil Service Patient Unit, while Daniati and Nugroho combined K-Means clustering and SAW in the selection of thesis topics. The implementation of SAW in a multi-criteria decision support system was also found in Jhaa et al and Sinaga and Murnawan [5].

Previous research conducted by Nicholas Vanderschantz, Claire Timpany & Annika Hinze about e-book exploration design used a sample of 60 participants containing 35 men and 25 women. Based on the 60 participants interviewed, 50 participants were between 15-25 years old and 10 participants

were 25 years old and older. Twenty-nine participants had completed or were currently registered in the humanities or arts degree (i.e., graphic design, humanities, media arts etc.). This study was designed to get participants' preferences for the visual display of books in pDL and understand how much metadata they like when viewing books in the pDL interface. In particular, studies explored interface design preferences for thorn book display, front cover, back cover, blurbs and combinations of several and/or all of these elements. This research was conducted as a semi-structured interview using a paper prototype. From the study described above, the authors hypothesized that the selection of similar e-books might be influenced by book covers, information related to books, metadata, and features in books such as a table of contents. The study reported here investigated the preference for presenting e-book information in pDL [30].

Mohhamed Menacer presented the concept and design of authoring systems to create and build application programs for e-book packages or e-book portfolios which will include metadata, meta-content, and other related materials and resources stored in special databases. This system is basically a digitization process of various phases of e-book creation and development, as well as a collection of structures for various types of content and information in the form of hypertext documents, multimedia, and presentations. The aim of the study is to present a systematic approach to authors of e-books by collecting and digitizing the most relevant content and information in an academically structured manner and general purpose books or similar documents for the efficiency of online and offline use, delivery and dissemination. In conclusion, the concept of authoring systems for e-book and e-content will enable efficient advanced search, content manipulation and indexing, Web content distribution, and marketing. In addition, Natural Language Processing techniques will be implemented more reliably and efficiently for text mining, indexing, tagging, online content information retrieval, and document processing. In the initial implementation phase, the meta details of three books have been analyzed and extracted into a special database using the "automatic content builder maker" feature. It took some time to complete the initial phase because the manual validation and validation processes were needed [6].

The ongoing research by Jose Bidarra experimented with the EPUB3 standard began with making e-books about beautiful lagoons with diverse fauna and flora in the middle of Portugal (Obidos). In this project, they tried various widgets and scripts in the Apple iBooks format. The results involved three strategic components, which can be clearly distinguished

in their workflows: 1. Establish the potential for technology: the format and the most common authoring tools that enable effective game-book creation in learning; 2. Identify the role of narration and games: what types of narratives and game genres can be recreated as game-books for learning, and what learning activities can be prepared based on this typology; 3. Show the application of real education: according to a certain level of education, what pedagogical model can integrate the game-book better, and where the subject area is most effective [31].

The last one is an article written by Dave Hailey & Rebecca Walton who published about digital e-books. They suspect that the Mobi and EPUB frequencies are less than their suitability for the environment of use, duty, and reader devices rather than unfamiliarity with parts of the document manufacturer. EPUB is a standard open file format that is smaller than the .ZIP file containing a website. If you convert the EPUB book extension to .ZIP and double-click it, you will see a collection of HTML, XML, and CSS pages plus an image folder (if the book has images). We try to reduce this unfamiliarity by (1) briefly explaining the weaknesses of PDF and HTML formats that are not shared by Mobi and EPUB formats and by (2) providing various ways to produce documents in the EPUB file format. The instructions for creating an EPUB document also apply to the Mobi format because the Mobi file format can be created from EPUB in one click [32].

V. CONCLUSION

This article aims to complete the previous review on the use of e-book in the learning process by observing the evidence from several weaknesses of e-book that have to be handled with the aim to summarize various finding and showing the direction of the research in the future. The review that has been done shows that previous empirical study has focused on one or more topics or themes namely: (a) e-book Readers among college students, (b) e-book in Teaching and Learning, (c) e-book Design.

Based on the overall findings that we have discussed, we conclude that e-books give a positive response to the students. It is possible that in the future e-books can be further developed in term of their application, use, design, and the content. This is intended to make the use of e-books completely acceptable to students because there are a small number of studies that concluded that there are still some students who like printed book rather than e-book. This article can help researchers to develop e-book facilities so that they can be utilized in learning systems in the classroom.

TABLE I. APPENDIX A. SUMMARY OF REVIEWED STUDIES

Study	Participans	Context	Types of data	Basic findings
Bjarme Skjødt Worm [27]	21 students participated in this study	Publish on 9 september 2013	Questionnaire Survey	This study concludes that e-learning with cases provides significant results better than e-learning only with textbook material (at the same level) when learning with complex knowledge and looking at the acquisition of knowledge. From the findings obtained for Problem-Solving, e-Case groups reached a level of knowledge comparable to classroom teaching, while learning with textbooks was lower than e-Case and teaching in class.

Table 1. Cont.

Chih-Cheng Hsiao et al [10]	25 apprentices were allocated for training with traditional Power Point atlases and 26 internships with interactive e-books	BMC Medical education 2016	Analysis interviews	This study states that the data obtained supports that interactive multimedia e-books are more effective than power points to facilitate the learning of morphology of blood cells and bone marrow
Dave Hailey & Rebecca Walton [32]	Rebecca Walton is a design and ICT expert as an assistant professor at Utah State University	Publish on 11 mei 2012	Analysis Reviews	They suspect that the Mobi and EPUB frequencies are less than their mismatches for the environment of use, duty, and reader devices rather than unfamiliarity with parts of the document manufacturer. We try to reduce this unfamiliarity by (1) briefly explaining the weaknesses of PDF and HTML formats that are not shared by Mobi and EPUB formats and by (2) providing various ways to produce documents in EPUB file format
Ee-Lon Lim & Khe Foon Hew [29]	Participating were 36 tertiary level students between 17-19 years old from Polytechnic North, a pseudonym. 23 male and 13 female	Publish on 3 april 2013	Analysis Survey	In this study the learning environment using e-books was positively received by the students but it had not been validated by the students' scores.
Eric J. Daniel [23]	Research focuses on K3 class readers	Publish on 27 November 2013	Reviews	The results and conclusions of the study showed a lack of statistically significant improvements in decomposition or understanding with e-books compared to printed textbooks.
Genevieve Marie Johnson [28]	About 75 students are enrolled in the intermediate program on campus, 150 basic education students, and 75 early childhood	Publish on 21 january 2015	Questionnaire Survey	The results of the current study show that students use many e-books rather than paper books for university studies. Although in the minority describe themselves as students who are more capable than students who buy books.
José Bidarra et al [1]	Environmental Studies", aimed at children in the 4th grade, mostly 9 to 10 year olds enrolled in Portuguese schools	IJIM Journal 2015	Analysis Survey	In this project, they tried various widgets and scripts in the Apple iBooks format. The results involve three strategic components, which can be clearly distinguished in their workflows: 1. Establish the potential for technology: the format and the most common authoring tools that enable effective game-book creation in learning; 2. Identify the role of narration and games; 3. Show the application of real education: according to a certain level of education, what pedagogical model can integrate the game-book better, and where the subject area is most effective.
Laura E. Hibbard [26]	258 5th grade students and parents are invited to survey the habit of reading their e-books	Publish on october 2014	Survey Observation	It was found that while students enjoyed browsing e-books from desktop computers provided by their schools. With the advent of e-books and e-Readers, the curriculum needs to reflect the novelty of this device. Students and teachers need to work together to navigate the most appropriate way to use this technology both inside and outside the classroom.
Mohamed Menacer & Amar Arbaoui [6]	-	IEE Journal 2013	Analysis Design	The concept of authoring systems for e-books and e-content will enable efficient advanced search, content manipulation and indexing, Web content distribution and marketing. In addition, Natural Language Processing techniques will be implemented more reliably and efficiently for text mining, indexing, tagging, online content information retrieval and document processing. In the initial implementation phase, the meta details of three books have been analyzed and extracted into a special database using the "automatic content builder maker" feature.
Nancy M. Foasberg [22]	Of the 1,705 students who responded to the survey, 401 say that they read e-books . Most students (338) who use e-books read them on a device other than an e-reader, but 63 say they use a dedicated reader for e-books	Pulish on december 2011	Questionnaire Survey	Many Queens College students expressed interest in e-readers. Furthermore those who have e-readers don't use it exclusively, and only one third say they prefer printed reading.

Table 1. Cont.

Nicholas Vanderschantz et al	A total of 60 participants were recruited for this study, 35 male and 25 female. Of the 60 participants interviewed, 50 participants were between the ages of 15-25 and 10 participants were 25 years and older.	Publish on 3-5 september 2015	Questionnaire interviews	This study concludes that the trend of metaphor-based interface design recorded in the PDL design on mobile devices does not meet the needs or preferences of current e-book users.
P. I. Ciptayani and K. C. Dewi [5]	Samples were taken from the campus library at the Bali State Polytechnic	Journal of Physics 2018	Analysis	This study aims to build a support system for the decision to use SAW to help library management to choose e-books providers. From the implementation it can be concluded that SAW managed to rank all alternatives.
Robyn Gray & Vivian Howard [14]	55 respondents join in this study	Publish on 11 mei 2017 article view 141 Received in desember 2016 Accepted in januari 2017	Survey Interviews	The findings show that according to librarians, young adults who use libraries prefer physical books than e-books and are not interested in library programs that illustrate their use of e-books.
Yin Zhang & Sonali Kudva [25]	Data from a survey of national reading habits conducted by Planet Pew Research Center. The sample represented nationally from 2,986 people over the age of 16 in the USA	Publish on 1-6 november 2013	Questionnaire	The results of this study illustrate that there are various factors that contribute to e-books. Future research must be individual contexts and situations characteristic of functions that can be fulfilled by e-books.

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