

Students View on Using Digital Books in Asynchronous Learning

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Abstract

As teaching and learning media, digital books offer many benefits, such as contain multimedia and can be accessed by any devices, comparing with printed books. This study aimed to investigate the usefulness of digital books as learning media in the asynchronous learning. The study was conducted based on sample of 24 diploma 3 students in Politeknik Kota Malang (Poltekcom). To obtain the data, a test and a survey were given to the students at the end of the course. The result showed that the use of digital book facilitated students to do independent learning and master the course material as well as it improved student achievement toward the subject. The digital book features which are portability, reflowable content, multimedia support and navigation were also found useful to support students learning. On the other hand, difficulties to provide electronic devices for reading the digital book and eye fatigue became the biggest challenges faced by students during the learning process. Some suggestions were given by students, thus, needed to be considered by academicians and digital book developers for improving the development of digital books in the future.

Keywords: *asynchronous learning, digital book, multimedia*

Introduction

As a long-distance learning system, asynchronous learning uses digital resources to support work relations among learners and with teacher without any time constraints (Mayadas, 1997). The learning is based on constructive theory, which learners are encouraged to improve their self-competences. Asynchronous learning is commonly facilitated by digital media such as e-mail, discussion, interactive video, blog, wiki, and interactive game. Therefore, learners are able to access learning resources anytime and anywhere.

Media plays an important role as a tool to help students understand the lesson and create effective learning. As the development of computer and information technology, a lot of media are adapted to support learning process. Many computer-based learning media have been developed both in the form of offline model, such as module, animation and Computer Aided Instruction (CAI), and online model, such as web-based course and learning management system. Many kinds of learning management system are utilized

since it contains various digital resources, offers interactive features that connect learners and teacher even when they cannot be online at the same time, and provides assessments.

One of digital media that is frequently used is digital book or e-book. A digital book consists of texts, pictures, videos and audios and is published in a digital form so that it can be accessed from computers and other electronic devices. Digital books typically has become the electronic version of paper books. Nonetheless, digital books can be possibly published without their printed ones.



Figure 1. Digital book

Format of digital books is various. The format of digital books is supported either by some big companies, such as PDF by adobe, swf by flash, doc by Word, or certain e-book readers and any devices. In 1990, the format of open e-book was developed because it enabled both publishers and software developers to use one format that can be opened using any e-book reader software and electronic devices. Epub (Electronic Publication), introduced by International Digital Publishing Forum (IDPF), is one of digital book format that has been standardized. Epub has replaced open e-book as open book format. It consists of multimedia files, html5, css, xhtml, and xml that place in one file with epub extension.

Nowadays, epub format has become the most popular digital book format. It does not refer to a certain developer and can be read from any devices, such as computer (AZARDI, Calibre, plugin firefox, plugin google chrome), Android (FBReader, Ideal Reader), iOS (ireader), Kobo eReader, Blackberry playbook, Barnes and Noble Nook, Sony Reader. Epub is mainly used by many people since its features offer a lot of benefits:

- Open format and free
- Availability of epub readers in any devices
- Variety of epub maker software
- Multimedia (video and audio) support
- Reflowable (word wrap), and text size setting
- DRM support
- Styling CSS

The use of digital books as teaching and learning media offers more benefits, such as relatively withstand time, contain multimedia and can be accessed from any devices, comparing with printed books. Its use can get the attention of students who are digital natives to learn independently. In addition, the use of e-book in teaching and learning had been discussed in the previous studies.

Aly and Gabal (2010) conducted experimental study to examine the effect of using e-book and paper book into delivery of Physical Education lesson. The result showed that e-book had more effective and positive influence on learning comparing with paper book. The attractive presentation of e-book that was supported by multimedia enabled students to understand the lesson as well as motivated them to learn. It was also found that students who used e-book got higher score than those who used printed book.

Similar study was conducted by Nie, Armellini, Witthaus, and Barklamb (2011) who investigated the incorporation of e-book reader into course material delivery of two distance taught master's programmes. Challenges for better access to readings and efficiency of limited study time were faced by students during learning process. In response to the challenges, the use of e-book afforded some benefits: better access to readings, more efficient study time, new learning strategies, and cost saving. While using e-book reader, thus, students improved their learning experiences.

In 2012, Chen, Fan and He carried out a study about the effect of electronic books in college students. Majority of students had positive attitude to the use of an electronic book and preferred to use it on their learning, especially reading articles. Not only did students read articles and take notes on e-book, they could also watch videos and search particular words easily and fast. Students perceived that e-book was useful especially for those International class students, who their first language is not English. They perceived that the use of e-book reader was practical because they could read articles and open dictionary in the same electronic devices. In addition, the use of e-book could save money since the price of paper books was quite expensive.

Nevertheless, Chong, Lim, and Ling (2008) found different findings on a case study that explored the perception of Multimedia students toward e-book usage. The result of survey showed students were not highly encouraged to use e-book, where only half of them have read e-books. It was found the most factors that hinder student interest of reading e-books are troubles of installing a specific reader and difficulties of reading from a computer screen.

The present study was designed to study the utilization of digital books in asynchronous learning. It aimed to investigate the usefulness of the digital book as learning media and students' competence as results of using the digital book during learning process.

Research Methodology

The present study employed mixed methods that combine quantitative and qualitative methods to investigate the usefulness of digital books used as learning media in asynchronous learning. According to Spratt, Walker, and Robinson (2004), the quantitative method was used to identify the frequency of students' responses to the given statements in the survey. Meanwhile, the qualitative approach was employed to gain further insight and confirmation on students' responses to the statements.

The study was carried out in Poltekcom Malang. The participants were 24 diploma 3 students who were in the second year of Mechatronics Technology study program and took Java Programming course. In this course, the materials were delivered using asynchronous learning that was supported by digital books. The digital book was used as teaching and learning media which was expected to facilitate students' independent learning.

At the end of the course, the data of the study was collected through a test and a survey. The test was given to evaluate the participants' mastery to the course materials. According to Arikunto (2008), a test is a range of questions or practices as tools to assess knowledge, skill, and competence of individual or groups. At this point, the mastery of participants to the course material was seen from their test score. After the test had been done, a questionnaire (see appendix 1) was distributed to all participants through e-mail in which the participants were given more time to reflect on their experience of using the digital book. The questionnaire is divided into two parts:

- a. The first part of questionnaire consists of 10 close ended questions, which the participants were provided with answer choices to the question. The participants were required to rate the usefulness of digital book referring to the question items.
- b. The second part of questionnaire contains 4 open ended questions that ask the participants to give their opinion on using digital book during the learning process. To gain in-depth data, all participants were also asked their willingness to have interview session when the researcher needed to confirm their further responses referring to the questionnaire result. Through the survey, in addition, the participants were required to give suggestions for improving the digital book usage in the future.

Furthermore, both of test and survey results were analyzed to answer the research question. Firstly, the data of the survey in close ended questions were analyzed using descriptive statistic by finding out the frequency of participants' responses on each item of questionnaire. Meanwhile, the qualitative data of participants' opinion was grouped based on the theme. After that, the researcher reviewed and coded the responses in order to simplify the answers. While data was processed, it was found that both of quantitative and qualitative data had similar results. The similarities can be used as confirmation or cross-validity of the research findings. Secondly, the participants' test score was compared with their score of another task, which participants did not use the

digital book. Finally, all the data and the analysis were discussed using the existing literature.

Finding and Discussion

At the end of the course, 24 participants fulfilled the questionnaire to give their opinion to the use of digital book during asynchronous learning process. The participants were required to answer whether they had experience of using digital books before taking the course.

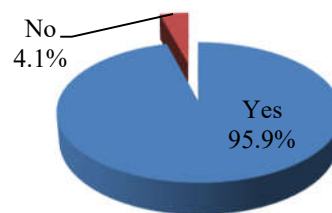


Figure 2. Previous experience of using digital books

Based on figure 2, the total of participants who had experience of using digital books was higher than those who had not. It shows that the use of digital book as learning media in this study was not new for the majority of students. Since the digital book had been commonly used by students, it was necessary to identify its usefulness as learning media in this study which is shown in table 1.

Table 1.

Students' opinion on the usefulness of the digital book in learning (close ended questions)

Item	Statement	Frequency (%)			
		SA	A	D	SD
1.	I liked to use the digital book as the learning in this course. <i>Saya suka menggunakan buku digital sebagai bahan materi kuliah.</i>	29.2	66.7	4.1	-
2.	I could understand the course materials easily using the digital book. <i>Saya dapat memahami materi perkuliahan dengan mudah dengan menggunakan buku digital.</i>	25	58.3	16.7	-
3.	I learned independently using the digital book <i>Saya bisa belajar secara mandiri dengan menggunakan buku digital.</i>	25	33.3	41.7	-

Item	Statement	Frequency (%)			
		SA	A	D	SD
4.	I got new learning experience using digital book. <i>Saya mendapatkan pengalaman belajar baru dengan menggunakan buku digital.</i>	33.3	54.2	12.5	-
5.	I preferred to use digital books to paper books <i>Saya memilih menggunakan buku digital daripada buku cetak.</i>	41.7	37.5	20.8	-
6.	The use of digital book improved my achievement (grade) <i>Penggunaan buku digital meningkatkan nilai saya.</i>	-	33.3	66.7	-

Note: SA=Strongly Agree; A=Agree; D=Disagree; SD=Strongly Disagree

Among 24 participants, item 1 shows that 95.9% of participants (total of SA + A) stated that they liked to use the digital book in their course. This total is extremely higher than the number of participant who did not like. Regarding the mastery level of students on the course material, in item 2, 20 participants (total of SA + A) viewed that the use of digital book facilitated them to master their course material while 4 participants (16.7%) did not agree with the statement. As it is seen in item 6, however, 16 participants (66.7%) disagreed that using the digital book improved their grades. In order to confirm whether the achievement of students had an improvement, the scores that students got from the task while using the digital book and the paper book were compared. Table 2 shows the average scores between the two.

Table 2.

Students' average test score using digital book and paper book

	Paper Book	Digital Book
Average Score	72.82	74.64

Based on table 2, the average score of students who used the digital book was slightly higher than the average score of students who used the paper book. The finding was similar with the result of the experimental study conducted by Aly and Gabal (2010). The result showed that students who used digital books were able to get higher score than those who used paper book only.

In this study, students' opinion on the use of digital book during the process of synchronous learning is described in item 3 and 4 (table 1). Generally, 58.3 % participants (total of SA + A) admitted that they could learn independently while using

digital book during the course. However, 10 participants (41.7%) did not agree to the statement. This result showed that the use of the digital book facilitated students to do independent learning although many students thought otherwise as they still needed the presence of teacher to guide them directly. Meanwhile, most students perceived that they got new learning experience by using the digital book. This finding is supported by Nie, et al. (2011) who found that the use of digital books helped students gain new learning experience and strategy since the learning took place without any constraint of time and place.

Through the survey, all participants were also asked about their interest in using the digital book comparing with the paper book. Item 5 (table 1) shows that majorities of participants (79.2%) preferred to use the digital book to the paper book. In the other word, students were more interested in using digital book in the class. Aly and Gabal (2010) and Chen et al. (2012) found the similar finding of the present study. In addition, the result of survey on the usefulness of digital books was supported by the participants' opinion which is summarized in table 3.

Table 3.

Students' opinion on the usefulness of the digital book in learning (open ended questions)

#Q2. According to you, what are benefits of using the digital book in this course? (Menurut Anda, manfaat apa yang Anda dapatkan dengan menggunakan buku digital?)

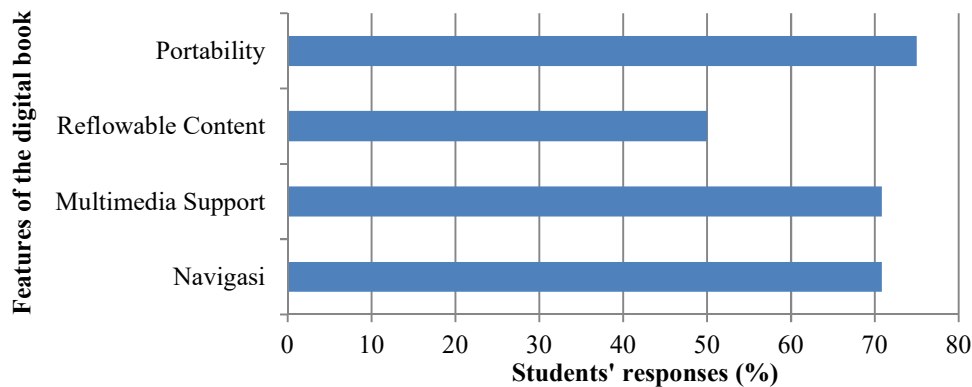
- Flexible and practical
 - Show media such as video
 - Provide learning resources
 - Make learning more interesting
 - Support independent learning
 - Paperless
 - Save cost
-

Most all participants said that they liked to use the digital book to learn the course material because of its practicality. Since it showed media, the students were facilitated to master the course material easily. The existing multimedia in the digital book made learning more interesting while the material could be delivered clearly (Aly & Gabal, 2010). Besides that, Nie et al. (2011) and Chen et al. (2012) found that students believed the usage of digital book saved their money as buying paper books needed much more cost.

Furthermore, the participants were required to rate the usefulness of the digital book features consisting of portability, reflowable content, multimedia support and navigation. Each feature was rated referring to 4 scales namely 1 for very not useful, 2

for not useful, 3 for useful, and 4 for very useful. The percentage of participants' responses, which is shown in figure 3, is taken from the total number of participants who chose number 3 and 4.

Figure 3. The usefulness of the digital book features based on students'



As it is seen in figure 3, the portability of the digital book became the most useful feature according to the students. It is shown by 18 participants (75%) who viewed that the portability of the digital book supported their learning that could take place anytime and anywhere. Then, 17 participants (70.83%) rated that the use of navigation is as useful as the multimedia contained in the digital book. The students could easily search particular words using the navigation on the table of content. Not only did learn by reading, they could also learn by watching the presentation on the video. Lastly, half of participants admitted the usefulness of the digital book which its pages will always adjust the screen size of its reader (reflowable content).

Nonetheless, some students stated that they faced some challenges while using the digital book in this asynchronous learning system. Their statements about this case are listed in table 4.

Table 4. Challenges of using digital book

#Q3. What difficulties did you encountered in using digital book during asynchronous learning? (Apa saja kesulitan yang Anda temukan dalam menggunakan buku digital selama proses pembelajaran ?)
- Providing electronic devices for reading the digital book (8 comments)
- Eye fatigue (4 comments)
- Difficult to understand some words (4 comments)
- Difficult to understand the course material (2 comments)
- Impractical as electronic devices need electric resources (1 comment)

#Q3. What difficulties did you encountered in using digital book during asynchronous learning? (*Apa saja kesulitan yang Anda temukan dalam menggunakan buku digital selama proses pembelajaran ?*)

- No lecturer attendance (1 comment)
-

Based on table 4, providing electronic devices, such as laptop and other gadgets, for reading the digital book becomes the most challenge that students encountered. The use of digital book required students to read from a screen while they felt reading on the screen for too long was tiring. The study conducted by Chong et al. (2008) supported the finding of the present study. They found that eye fatigue was a greater factor that hindered students' interest of reading e-book as it could disrupt students' concentration. Besides, some students criticized the language used for the content of digital book, such as difficult words and long-winded sentences. Two students commented that the language use for its content influence their understanding to the material. Moreover, students and teacher tends to be not in the same place and time in this asynchronous learning system.

Although some students faced a number of challenges while using the digital book, they had positive view for its next usage. Figure 4 depicts the participants' interest of using the digital book for other courses.

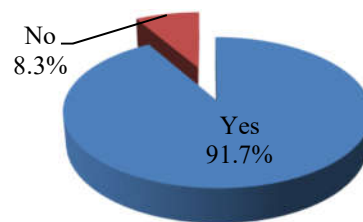


Figure 4. Using digital book for other courses

Figure 4 shows that 91.7% of participants have interest of using digital books in other courses. Differently, Cheng et al. (2008) found that the e-book usage was still not encouraging though basically these two studies faced similar challenges.

Referring to the usefulness and challenge of using the digital book in the asynchronous learning, in the last part of the survey, the participants were expected to give suggestions for improving the next usage of digital book in learning. The students' opinion regarding the question is summarized in table 5.

Table 5. Students' suggestions for the next utilization of digital book

#Q5. How should the digital book be used to better assist your learning?
(Bagaimana seharusnya penggunaan buku digital agar dapat lebih membantu proses belajar Anda?)

- Availability of infrastructure to support the learning
 - Has small size file
 - Need more lecturing through video in digital book
 - Use common words and concise sentences
 - The presentation of digital book should be more attractive to raise reader interest
-

The suggestions were given based on students learning experience using the digital book. Therefore, it is necessary for teachers to consider them for the development of digital books in the near future.

Conclusion and Suggestions

The aim of this study was to find out the usefulness of the digital book as teaching and learning media in asynchronous learning. Based on the results of survey and test, the use of digital book supported the learning. It was confirmed that its use facilitated students to learn independently, master the course materials and improve their grade. Most students also admitted that some features offered by the digital book were useful and support their learning in this course. On the other hand, some students faced some challenges of using the digital book, such as the availability of electronic devices and bad for eyes health. Nevertheless, those challenges did not hamper the use of digital book, because the digital book has more benefits. In response to the challenges, the students provided some suggestions that the university, academicians, and the digital book developers can consider for improving the next development of digital books into course delivery.

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Appendix 1

KUESIONER: PEMANFAATAN BAHAN AJAR BUKU DIGITAL DALAM PEMBELAJARAN *ASYNCHRONOUS*

Dengan hormat,

Saya Dyan Yulfiaini sedang melakukan penelitian tentang pengembangan bahan ajar Pendidikan Jarak Jauh (PTJJ) untuk tingkat Poltek dan PT. Topik yang dibahas dalam penelitian ini yaitu “Pemanfaatan Bahan Ajar Buku Digital dalam Pembelajaran *Asynchronous*”.

Oleh karena itu, saya mohon partisipasi Anda untuk mengisi kuesioner berikut guna membantu penelitian ini. Segala informasi yang Anda berikan akan dijamin kerahasiaannya karena data tersebut hanya akan digunakan untuk kepentingan penelitian.

Mohon untuk mengisi data diri Anda yang terdiri dari nama, asal PT, dan no. hp sebagai tanda bahwa Anda bersedia menjadi responden penelitian ini.

Atas kerja sama dan partisipasi Anda, saya ucapkan terima kasih.

Hormat saya,

Dyan Yulfiaini

Data Diri Responden

Nama :

Asal PT :

No. Hp : -

(Informasi ini akan dijamin kerahasiaannya. Mohon kesediaan Anda untuk bisa dihubungi melalui no. hp tercantum jika peneliti ingin menanyakan pertanyaan lanjutan atas data kuesioner)

Petunjuk Pengisian Kuesioner

Kuesioner ini digunakan untuk mengetahui manfaat penggunaan bahan ajar buku digital dalam proses belajar *asynchronous*. Untuk mengisi kuesioner, mohon Anda merujuk pada pengalaman Anda selama mengikuti perkuliahan pemrograman Java. Tidak ada jawaban benar atau salah. Anda cukup menjawab langsung berdasarkan apa yang sudah Anda lakukan dan rasakan selama proses perkuliahan dengan sejelas-jelasnya.

Kuesioner ini terbagi menjadi dua bagian. Pada **bagian pertama**, terdapat 10 pertanyaan. Berikan penilaian Anda terhadap pertanyaan tersebut dengan cara memberi **tanda centang (✓)** pada kotak yang tersedia. Khusus untuk pernyataan nomor 1-6, terdapat kolom jawaban **4=SS (Sangat Setuju); 3 = S (Setuju); 2 = TS (Tidak Setuju); dan 1 = STS (Sangat Tidak Setuju)**. Selanjutnya, **bagian kedua** kuesioner memuat 4 (empat) pertanyaan dan Anda akan diminta menuliskan pendapat terhadap pertanyaan tersebut.

Bagian Pertama: *Beri tanda centang (✓) pada pilihan jawaban yang Anda pilih!*

No.	Pernyataan	SS	S	TS	STS
1.	Saya menyukai penggunaan buku digital sebagai bahan materi kuliah.	4	3	2	1
2.	Saya dapat memahami materi perkuliahan dengan mudah dengan menggunakan buku digital.	4	3	2	1
3.	Saya bisa belajar secara mandiri dengan menggunakan buku digital.	4	3	2	1
4.	Saya mendapatkan pengalaman belajar baru dengan menggunakan buku digital.	4	3	2	1
5.	Saya memilih menggunakan buku digital daripada buku cetak.	4	3	2	1
6.	Penggunaan buku digital meningkatkan nilai saya.	4	3	2	1

7. Apakah penggunaan buku digital memotivasi Anda untuk belajar?

Ya Tidak

8. Apakah Anda akan menggunakan buku digital untuk mata kuliah lain?

Ya Tidak

9. Apakah Anda sebelumnya memiliki pengalaman menggunakan buku digital?

- Ya Tidak

10. Urutkan manfaat dari fitur-fitur buku digital di bawah ini dengan angka 1 – 4 (1= sangat kurang bermanfaat, dan 4= sangat bermanfaat)

- Portability* (dapat dibuka dimana saja)
- Reflowable content* (tidak perlu *zoom in*, halaman menyesuaikan dengan ukuran layar)
- Dukungan multimedia (buku dapat memutar video, maupun audio)
- Navigasi (navigasi menggunakan daftar isi)

Bagian Kedua: *Tuliskan pendapat Anda mengenai pertanyaan-pertanyaan di bawah ini dengan jelas!*

1. Tolong jelaskan mengapa Anda suka/tidak suka menggunakan buku digital sebagai bahan materi kuliah?

.....
.....

2. Menurut Anda, manfaat apa yang Anda dapatkan dengan menggunakan buku digital?

.....
.....

3. Apa saja kesulitan/hambatan yang Anda temukan dalam menggunakan buku digital?

.....
.....

4. Menurut Anda, bagaimana seharusnya penggunaan buku digital agar dapat lebih membantu proses belajar Anda?

.....
.....