

# The Development of a Comic-Based Economy e-Book as Learning Media

Aang Kurnia, Baedhowi Baedhowi and Hery Sawiji

Postgraduate Program, Teacher Training and Education Faculty of Sebelas Maret University, Surakarta, Indonesia  
aangkurnia4@gmail.com

**Keywords:** Economics e-book, comic, learning media.

**Abstract:** This research aimed to describe the feasibility of a comic-based economy e-book developed based on feasibility assessment resulting from validation conducted by lecturer, economy teacher and from student assessment. The procedure of e-book development employed Borg and Gall's model and conducted up to small-scale (limited) stage only. The instrument of collecting data used was questionnaire. Considering the result of assessment, it could be found that the comic-based economics e-book developed was feasible to be used. The percentage feasibility obtained score of 100% (very feasible) based on the media expert's validation, 100% (very feasible) on linguist's, 96% (very feasible) on material expert's, 100% (very feasible) on economy teacher's validation and 90.96% (very feasible) on student assessment. From those result, it could be concluded that the comic-based economy e-book developed was feasible to use as learning media.

## 1 INTRODUCTION

In instructional process, media is very essential to support a more interesting and higher-quality learning process. Susana & Masruri (2015) stated that applying media to learning does not mean replacing the teacher's role or other relevant methods in learning but supporting, completing and improving learning quality. Tiurma and Retnawati (2014) stated that a good learning is the one leading the students to be active, innovative, creative, effective and joyful. An alternative to gain an active, innovative, creative, effective and joyful instructional process is to develop teaching material or learning media in line with the student character. As digital world develops, learning media is not only in the form of printed or conventional one, but electronic book or called e-book has also moved forward. The change of digital era and the application of 2013 curriculum with scientific approach in Indonesia require teachers who are able to develop and to use an interesting teaching material in instructional process today by means of developing e-book. Suyatiningsih, Munawaroh, & Rahmadona (2016) stated that the application of scientific approach to learning involves process skills such as observing, classifying, measuring,

predicting, explaining and inferring. In the implementation process, teacher's help is much needed. The teacher's help can be in term of media development to facilitate the students learning.

Han's (2012) study found that preparing high-quality teacher can be done through the professional teacher training and development in using new technology in learning. Meanwhile, Letendre & Wiseman (2015) stated that improving education quality can be done by means of improving teachers' quality through teachers' training. It can be given by developing teaching material and learning media. It can be developed, for example, economy e-book.

The advantage of developing e-book is that it can give the students high scope of knowledge. In addition, the students are easier to comprehend the content of learning material delivered by the teachers, so that the learning process will be interesting and can improve the learning outcome. E-book or electronic book is a hardware and software system that can present information to the users in a large number of texts and enable the users to browse information within it rapidly and easily. It can be considered as software and physical ware object. Conceived as software object, e-book is only an electronic text catering to the same objective as the printed book does (Anuradha & Usha, 2015). Rao (in Jindal and Pant, 2011) stated that e-book is a

text in digital form or book converted into digital form or digital reading material or book in computer file format to be displayed to e-book readers. So, e-book is an electronic version of printed conventional module or book. Conventional module or book generally consists of a set of papers containing text and figure, so that electronic module or e-book contains digital information in the form of text, animation, simulation and figure as well.

A previous study conducted by Embong, Embong, Noor, Hashim, Ali, & Shaari (2012) suggested that electronic book or e-book offers a supplementary media or instruction to the students, teacher and school to support or to improve learning process. The development of economic e-book can produce a learning media that can facilitate the students understanding with the material or learning independently aiming to improve the students' learning outcome. Tang and Ellis (2016) stated that using e-book exerts a positive effect on the students' learning outcome. The utilization of digital comic-based economics e-book in this research is conducted individually and the teacher serves as learning facilitator rather than writer in the learning process. Amri and Ahmad (2010) suggested that in individual learning, there is still the relationship between instructor and students, but the relationship is represented by teaching material or learning media.

One of e-books that can be used in instructional process is a comic-based economy e-book. Educative comic is the one carrying on story and message about education to the readers. Meanwhile, textbooks at Kindergarten – College levels have used comic as one element of its learning material, despite simple visualization. Tatalovic (2009) stated that the education-themed comic can help explain science to the students, because of its visual attractiveness inserted with science, so that comic is a good media to deliver lesson material to the students. Buchori and Setyawati (2015) said that learning model, through comic, can stimulate and motivate the student to learn and can improve the students' character effectively. This statement is confirmed by Daryanto (2010), suggesting that comic contains visual element and strong story. The expression visualized makes the readers involved emotionally within it thereby reading continuously until the end.

The combination of figure and economic learning material can result in an attractive message, because the power of figure and story languages makes comic the effective graphic media to deliver message or content of economic subject to the

students. The figure of character and story in the comic can grow the students' imagination to think more critically during instructional process as the figures existing in e-book makes the learning material, comic's text makes the economic subject more understandable to the students, while the plot of story makes the message or information to be delivered followed and remembered easily by the students. It also inspires the author to develop the comic-based e-book, containing economic subject as the learning media for the students.

The use of comic-based economy e-book is displayed through android application. Android is a linux-based operation system for cellular phone such as smart phone. Android, according to Safaat (2011), is a linux-based operation system for mobile ware including operation system, middleware, and application. Android provides an open operation system to the developers to create and to modify application as they want. There are two types of android operation system distribution: playstore and open handset distributor (OHD). Playstore is the use of android operation system (OS) supported with google, while open handset distributor (OHD) is the independent android operation system (OS) without google's support.

The advantage of android operation system is providing a system facilitating the designer to make development without terms and conditions that should be paid for developing android platform or application. Android can also be used as learning media as it provides many supporting applications for learning process including math workout, words, android app, periodic table, epub reader, e-book android, ireader. This research and development employs android operation system with pocket book application available in the playstore. Suyoso and Nurohman (2014) stated that learning using android-based electronic media can improve the students' learning achievement and learning outcome.

The problem of research is how feasible is the comic-based economy e-book as the learning media. Meanwhile, the objective of research is to describe the feasibility of comic-based economic e-book development as learning media.

## 2 METHODS

The procedure of developing a comic-based economy e-book employed Borg and Gall's (1998) model consisting of (1) Research and information collection, (2) Planning, (3) Development preliminary form of product, (4) Preliminary field

testing, (5) Main product revision, (6) Main field testing, (7) Operational product revision, (8) Operating field testing, (9) Final product, (10) Dissemination & implementation. The development of economy e-book was conducted up to Preliminary field testing stage only.

The procedure of developing comic-based economy e-book is done in some stages adopted from Borg and Gall's development model: (1) Research and information collection. The first stage of development is conducted in two steps: research and information collection or preliminary study starting with pre-survey or need analysis aiming to collect necessary data and information about the problem in learning process, particularly the one related to the development of comic-based economy e-book, (2) Development Planning. It is to design the e-book development related to objective, benefit, and user of e-book, why the e-book developed is considered as important and how the process of developing comic-based economy e-book is, (3) Development preliminary form of product. This stage is one stage of e-book development based on the analysis of teacher and student's needs. The comic-based economy e-book is designed and adjusted with learning objective, material, need for attractive learning material, to facilitate the students understand the content of economy learning material, (4) Preliminary field testing. The design of comic-based economic e-book developed was then tried out in small-scale trial through expert validation and with the students using questionnaire to measure the feasibility of e-book developed.

The procedure of developing comic-based economy e-book adopted from Borg and Gall's development model is illustrated in the figure below.

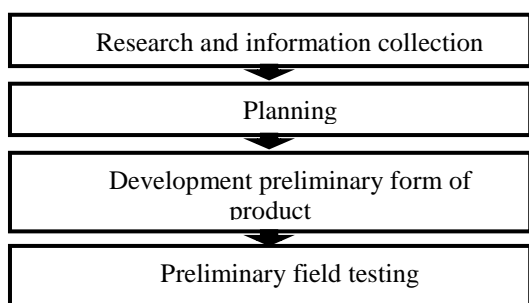


Figure 1: Development Stage

Techniques of collecting data used in the development of comic-based economic e-book were validation questionnaire and response questionnaire distributed to students. The data of questionnaire contains the judgment (assessment) of media expert,

material expert, linguist, economic teacher and students over the comic-based economy e-book developed. The data collection stage includes: (1) The validation of comic-based economy e-book to obtain qualitative data in the form of assessment, critique and recommendation to the e-book developed indicating whether the product is feasible or not to be used as the learning media, (2) Small-scale tryout with 23 students, (3) Revision of comic-based economic e book.

Then, the data obtained was analyzed qualitatively and descriptive quantitatively. The comic-based economy e-book is feasible to use as learning media when the percentage assessment of e-book is  $\geq 61\%$  (good criterion) for all aspects (Ridwan, 2010).

### 3 RESULTS AND DISCUSSION

This research was taken place in SMA Negeri 1 Pekalongan, Lampung Timur on January 2017. The model used in e-book development is Borg and Gall's research procedure and this research and development only comes to at small-scale tryout stage only. Furthermore, the procedure of development is divided into some stages based on preliminary study through interviewing teachers and students to collect information related to the availability of teacher and school and teaching material completeness and instructional process.

#### 3.1 Research and Information Collection

Considering the result of preliminary study through observation and interview in SMA Negeri 1 Pekalongan, Lampung Timur, it can be found that economic study area has not developed the learning media yet, particularly comic-based economic e-book. In addition, the students need attractive learning media that facilitates the students to learn independently. Therefore, there should be a learning media facilitating the students in understanding the economy learning material and in learning. The comic-based economy e-book is developed along with the 2013 curriculum referring to scientific approach and organized according to BNSP about how to develop a good learning media.

#### 3.2 Planning

The product developed is an economy e-book within which there is an illustration of comic attributed to

the content of economy learning material. The type of comic used is cartoon and consists of five characters with different characteristics. Using comic illustration is intended to facilitate the students understanding with the difficult material in learning economics' material particularly in Central Bank and Financial Service Authority. In addition, on its implementation, the economy e-book developed employs android application thereby facilitating the students learning independently both in the classroom and out of school environment. The comic-based economy e-book uses android operation system with pocket book application available in the playstore.

### 3.3 Development Preliminary Form of Product

The development stage conducted includes developing draft e-book starting with designing the prior product (prototype). The design of and the draft economy e-book are adjusted with scientific approach applied in the 2013 curriculum consisting of (1) the front page of comic-based economic e-book including author's name, curriculum, e-book title, figure, user, study program, and year; (2) the identity of e-book includes author and those contributing to the comic-based economy e-book developed, (3) preface containing acknowledgment and information about the role of comic-based economy e-book, (4) table of content containing the component existing in the comic-based economic e-book completed with page number, (5) the introduction of comic figures containing the name of comic characters existing in the comic-based economic e-book. The names of comic characters existing in e-book include Kenta, Akira, Ken, Chio and Pak Tada, (6) manual instruction containing the instruction of using the comic-based economy e-book, (7) basic competency containing basic competency and learning objective to be achieved using the comic-based economy e-book, (8) concept map containing the concepts of material to be learnt or discussed in the comic-based economic e-book, (9) learning objective containing the learning objective including the material to be achieved and mastered by students using the comic-based economic e-book, (10) introduction containing the description of material to be discussed in learning activity process using the comic-based economy e-book, (11) learning activity containing indicators or learning objective to be achieved by the students in learning the comic-based economy e-book, (12) material section containing the explanation of

knowledge, concept and principle existing in the comic-based economy e-book, related to Central Bank and Financial Service Authority the students should learn, (13) exercises containing practicing questions the students should work on aiming to practice the students' ability of learning and understanding the material existing in the comic-based economy e-book. Meanwhile, the questions existing in e-book are organized based on indicator and learning objective, (14) summary containing the review of material presented briefly to facilitate the students learn the material existing in comic-based economy e-book, (15) references containing the references used in organizing the comic-based economic e-book, (16) answer key containing the answers to exercises existing in the comic-based economy e-book, (17) glossary containing terminologies used in the comic-based economy e-book, and (8) back cover containing author's identity.

### 3.4 Preliminary Field Testing

The e-book developed is then tried out to find out whether or not it is feasible to use for the students in learning process. This tryout is conducted through the validation made by media expert, material expert, linguists, economy teacher, and students' assessment. The summary of validation made by media expert, material expert, linguists, practitioner or economy teacher, and students' assessment is presented in the table number.

Table 1: Summary of Validation by Media Expert

Indicator of Media Assessment	Rating Scale				
	$\sum ni$	$\sum N$	100%	Score	Criteria
Design of e-book appearance and material	44	44	100%	100	Very good
Function and benefit of media	48	48	100%	100	Very good
Characteristics of e-book as learning media	108	108	100%	100	Very good
Total score	200	200	100%	100	Very good

The result of media expert's assessment in table 1 shows that the indicator of e-book appearance and material design obtains score of 100 with very good criterion, function and benefit of media obtains score



of 100 with very good criterion, e-book characteristic as learning media obtains score of 100 with very good criterion. From the result of calculation, total score of 100 is obtained with very good criterion. Furthermore, the summary result of validation from material expert can be seen in table 2 number.

Table 2: Summary of Validation by Material Expert

Indicator of Material Assessment	Rating Scale				
	$\sum ni$	$\sum N$	100%	Score	Criteria
Content feasibility	78	80	100%	97.5	Very good
Display feasibility	91	92	100%	98.91	Very good
Learning with <i>E-book</i>	23	28	100%	82.14	Very good
Total score	192	200	100%	96	Very good

The result of material expert shown in table 2 suggests that the indicator of e-book content feasibility obtains score of 97.5 with very good criterion, presentation feasibility obtains score of 98.91 with very good criteria, and learning using comic-based e-book obtains score of 82.14 with very good criterion. From the result of calculation, total score of 96 is obtained with very good criteria. Furthermore, the summary result of validation from linguist can be seen in table 3 number.

Table 3: Summary of Validation by Linguist

Indicator of Material Assessment	Rating Scale				
	$\sum ni$	$\sum N$	100%	Score	Criteria
Language assessment	52	52	100%	100	Very good

The result of linguist assessment shown in table 3 suggests that indicator of language assessment obtains score of 100 with very good criteria. From the result of calculation, total score of 100 is obtained with very good criterion. Furthermore, the summary result of validation from Economics teacher can be seen in table 4 number.

Table 4: Validation by Economic Teacher

Indicator of Material Assessment	Rating Scale				
	$\sum ni$	$\sum N$	100%	Score	Criteria
Content feasibility	80	80	100%	100	Very good
Display feasibility	92	92	100%	100	Very good
Learning with <i>E-book</i>	28	28	100%	100	Very good
Total Score	200	200	100%	100	Very good

The result of assessment by practitioners shown in table 4 suggests that the indicator of e-book content feasibility obtains score of 100 with very good criteria, presentation feasibility obtains score of 100 with very good criteria, and learning using comic-based e-book obtains score of 100 with very good criteria. From the result of calculation, total score of 100 is obtained with very good criterion.

Considering the table of assessment summary by some experts above, it can be found that the media experts rates 100% with very good criteria. Material expert rates 96% with very good criteria, linguist rates 100% with very good criteria, and economy teacher rates 100% with very good criteria. These results indicate that the comic-based economy e-book is feasible to use as learning media as it has very good criteria as a learning media. The media expert says that the appearance of e-book has been very attractive as the material section contains the subject matter illustrated using comic conversation, thereby facilitating the students understand the material. Rota and Izquierdo (2003) stated that using comic can facilitate the students understand the science delivered through fiction story to grow the students' imagination. E-book has passed through validation stages and has been corrected or revised, so that it can be used for the small-scale tryout to obtain the students' assessment. The tryout is conducted with all of the 10<sup>th</sup> IIS 3 graders as the sample aiming to get students' recommendation, input and assessment concerning the comic-based economic e-book. The result of students' assessment response to comic-based economic e-book in the 10<sup>th</sup> IIS 3 grade consisting of 22 students can be seen in table 5.

Table 5: Summary Students' Response

Aspect	$\sum ni$	$\sum N$	Score	Criteria
Appearance	896	968	92.56	Very Good
Material Display	1259	1408	89.42	Very Good
Benefit of e-book	1047	1144	91.52	Very Good
Total Score	3202	3520	90.96	Very Good

Considering the summaries of assessment on the comic-based economy e-book by the students, it can be seen that the appearance aspect scores 92.56 with very good criteria, material display scores 89.42 with very good criteria, and benefit scores 91.52 with very good criteria, with the total score of 90.96. The result shows that the comic-based economic e-book is feasible to use by the students as the learning media. To obtain a high-quality e-book that is feasible to use in the learning process, some revisions should be made. The revision on e-book is done following the trial through expert validation and small-scale trial with the students, so that critique and recommendation are obtained to the e-book developed.

The result of revision can be the change of e-book's front page appearance, font and size, and the addition of design to background of comic stories. The comic-based economic e-book that has been validated will be revised corresponding to the result of assessment by validation expert and input from the students, so that it can be used as the learning material for the students.

## 4 CONCLUSIONS

Considering the result of research and data analysis conducted, it can be concluded that the comic-based economy e-book developed is feasible to use by the students as the learning media. The result of validation obtains score of 100% with very good criteria from media expert, 96% with very good criteria from material expert, 100% with very good criteria from linguist, and 100% with very good criteria from economy teacher's assessment. Then, the small scale try out conducted with the students obtain score 90.96% with very good criteria. The result of research indicates that the comic-based economy e-book that has been assessed by the validation experts and students can be used in the instructional process.

## REFERENCES

- Amri, S., and Ahmad, I.S., 2010. *Proses Pembelajaran Kreatif dan Inovatif Dalam Kelas*. Jakarta: PT. Prestasi Pustaka.
- Anuradha, K.T & Usha, H.S., 2005. *Use of E-books in an Academic and Research Environment: A Case Study from the Indian Institute of Science*. *Journal Center for Science Information, Indian Institute of Science, Bangalore, India*, 59(6), 489-511.
- BNSP. 2006. *Instrumen Penilaian Tahap I Bahan Teks Pelajaran Pendidikan Dasar dan Menengah*. Jakarta. BNSP.
- Borg, W.R. & Gall, M.D., 1983. *Educational Research: An Introduction, Fourth Edition*. New York: Longman.
- Buchori, A., and Setyawati, R.D., 2015. *Development Learning Model of Character Education Through E-comic in Elementary School: International Journal of Education and Research*, 3(9), 369-386.
- Embong, A.M., Noor, A.M., Hashim, H.M., Ali, R.M., dan Shaari, Z.H., 2012. *E-book as Textbook in the Classroom. Procedia Social and Behavioral Sciences*, 47(5), 1802-1809.
- Han, S., 2012. *Big Moves to Improve the Quality of Teacher Education in China*. *On the Horizon* 20(4), 324-335.
- Jindal, S & Pant, A., 2011. *Availability of E-book in Science: Case Study of University of Delhi*, 31(3), 313-328.
- Letendre, G.K. & Wiseman, A.W., 2015. *The Challenges of Teacher Effectiveness and Quality Worldwide. International Perspectives on Education and Society*. 27, 1-38.
- Riduwan, 2010. *Skala Pengukuran Variabel-Variabel Penelitian*. Bandung: Alfabeta.
- Rota, G., and Izquierdo, J., 2003. *Comic as a Tool for Teaching Biotechnology in Primary Schools: Electronic Journal of Biotechnology*, 6(2), 86-89.
- Safaat, H.N., 2011. *Android: Pemrograman Aplikasi Mobile Smartphone dan Tablet PC Berbasis Android*. Bandung: informatika Bandung.
- Susana, F.E., & Masruri, M.S., 2015. *Pengembangan Multi media Pembelajaran Ekonomi SMA/MA Dengan Materi Permintaan dan Penawaran*. *Jurnal Inovasi Teknologi Pendidikan*, 2(1), 64-73.
- Suyantiningsih, Munawaroh, I. & Rahmadona, S., 2016. *Pengembangan Multimedia Pembelajaran Berbasis Scientific Approach Terintegrasi Nilai Karakter*. *Jurnal Kependidikan*, 46(1), 1-13.
- Suyoso & Nurohman, S., 2014. *Pengembangan Modul Elektronik Berbasis Web Sebagai Media Pembelajaran Fisika*. *Jurnal Kependidikan*, 44(1), 73-82.

- Tang, Y., and Ellis, P.B., 2016. *Nursing Students Learning Experience With E-Books: the Journal of Academic Librarianship*, 5(2), 1-5.
- Tatlovic, M., 2009. *Science Comic As Tools for Science Education and Communication: a Brief, Exploratory Study. Journal of Science Communication*, 8(4), 1-16.
- Tiurma, L., and Retnawati, H., 2014. *Keefektifan Pembelajaran Multimedia Materi Dimensi Tiga Ditinjau dari Prestasi dan Minat Belajar Matematika di SMA. Jurnal Kependidikan*, 44(2), 175-187

