

## Macroeconomics E-book development: The role of literacies in blended learning

**Suparno Suparno**<sup>a\*</sup>, Jakarta State University, Faculty of Economics, Department of Economics Education, 13220, DKI. Jakarta, Indonesia. <https://orcid.org/0000-0002-5518-0489>

**Ari Saptano**<sup>b</sup>, Jakarta State University, Faculty of Economics, Department of Economics Education, 13220, DKI. Jakarta, Indonesia. <https://orcid.org/0000-0002-4182-2284>

**Susan Febriantina**<sup>c</sup>, Jakarta State University, Faculty of Economics, Department of Economics Education, 13220, DKI. Jakarta, Indonesia. <https://orcid.org/0000-0001-7661-8227>

**Bagus Shandy Narmaditya**<sup>d</sup>, Universitas Negeri Malang, Faculty of Economics, Jalan Semarang 5, Malang, 65145, Indonesia <https://orcid.org/0000-0002-4019-8723>

**Disman Disman**<sup>e</sup>, Indonesia University of Education, Faculty of Economics, Department of Economics and Business, 40154, Bandung, Indonesia. <https://orcid.org/0000-0001-5070-4952>

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### Abstract

Having literacies in economics and financial will be beneficial to enhancing individual and family well-being. The purpose of this research aims to produce an e-book on economic literacy. To achieve the purpose, this study adopted a research and development method. Media is developed through student analysis, state objectives, determine goals, choosing methods, media and materials, which require student participation, evaluation and revision. Product development was validated by material experts, media experts, and piloted on a limited scale. The results of this study indicate that the e-book as learning media is effective in contextual economic learning. Also, it is perceived as easy to use for self-study, and it effectively supports blended learning. However, the findings also noted that many students choose traditional classroom learning instead of using blended learning. Further researchers can develop e-book learning media that supports blended learning in other difficult subjects with limited time and access to learning.

Keywords: Economic Literacy, Macroeconomics, E-book, Blended Learning, Research Development

\*ADDRESS OF CORRESPONDENCE, Suparno Suparno, Gd. M, Faculty of Economic, Jakarta State University. Campus A, Jl. Rawamangun Muka, East Jakarta, DKI Jakarta, 13220, Indonesia  
Email address: [suparno@feunj.ac.id](mailto:suparno@feunj.ac.id)

## 1. Introduction

Teaching and learning activities are purposed to provide an excellent service quality by involving students in real experience (Dhawan, 2020; Lerner et al., 2021) and preparing for living in the community (Hidayati et al., 2020; Sailah, 2014). In doing so, learning can be optimized using media, including web technology-based learning media, which is appropriate to overcome student learning difficulties (Mukminan, 2012). However, the learning process is still dominated by the lecture and lecturer methods as the main resource, or well known as teacher-centred learning (Öztürk, 2011).

Social learning theory states that learning can be shaped through the environment (Bandura & Walters, 1977). It is therefore, encouraging students to arrange experiences based on the conditions presented by the teacher, will beneficial for students knowledge and experience (Olusegun, 2015). This is reinforced in the cognitive learning theory that learning in cognitive structures compiles various existing knowledge in learning to become new knowledge for students (Biddle, 1986; Boström et al., 2018). It indicates that student knowledge needs to be built through the conditions of sources and good learning media and can present real learning that will provide permanent knowledge and experience for students.

The e-book can be developed with multimedia capable of presenting sound, videos, films, scientific data, other people's experiences and even simulations of a place without any place and time restrictions (Ballhaus, 2010). E-books are seen as one of the effective media that need to be developed in blended learning where some lectures present online meetings and e-books that can optimize learning outcomes in Higher Education (Szapkiw et al., 2012; Santoso et al., 2018; Li & Chen, 2017). Similarly, e-books are environmentally friendly learning media, reduce paper usage and can be applied to web-based learning (Martin, 2011). Teachers can also use blended learning to provide problem-based and project-based contextual learning exercises.

A prior study also mentioned that e-books had become a potential, effective, and efficient source of electronic information (Kurniingsih & Ismayanti, 2017). E-books can be stored in the form of a Compact Disc in the school library, operated on the personal computer offline, brought to learning by students on mobile phones and note-book android, sent in the form of files to other students, as well as the further development can be carried out evaluations online because it is based flash. This supports the development of easy and inexpensive learning media with international expert teachers. In economics, there are some materials that are perceived as difficult by students, including macroeconomics.

Macroeconomics courses provide competence in the ability to analyze macroeconomic problems and their solutions in policymaking (Maggetti & Gilardi, 2015; Nowak, 2016). The current economic condition of Indonesia has a lot of policy information that students need to know, such as economic growth, the amount of debt, Bank Indonesia policy, inflation rates, even the potential, and national macroeconomic resources. To deal with, economic and financial literacy are essential to provide knowledge about potential and resources. Effective learning steps provide basic knowledge about economic management and family welfare (Widayati, 2012). The importance of having the capability in economic and financial literacy will have a positive correlation with economic growth (Yoshino, 2015). Indeed, Mastery of economic and financial literacy will influence the quality of life in the future Pranyoto (2015).

## **1.1. Conceptual and Theoretical Framework**

### *1.1.1. Blended Learning*

Blended learning combines in-class learning and integrated online learning (Lalima & Dangwal, 2017; Husamah, 2014). The technology has been developed with various advancements, such as the creation of innovative new learning media, progress to study and receive information, the ability to present information, and it has become the main component presented in blended learning. (Graham et al., 2011; Dinning et al., 2016; Zainuddin & Keumala, 2018; Pardede, 2012). Blended learning not only offers learning remotely but also as learning resources. Blended learning also adds an extra dimension to the implementation and development, in which there is a different combination of the physical classroom and virtual face-to-face synchronously (Hastiea et al., 2010).

Learning appearance has brought a paradigm to shift in education and leave a widespread impact on higher education (Soomro et al., 2018). Porter et al. (2016) remarked that blended learning helps facilitate the process of acceptance of learning and it is expected that blended learning can continue to be developed and applied to improve some positive aspects of education. Similarly, Hedjazi et al. (2012) also stated that there is a significant positive impact of blended learning on students' academic achievement at Tehran University in Jordan. In the implementation, blended learning combines instruction from two teaching models that require the role of computer-based technology (Graham, 2010; Medina, 2018).

Furthermore, the form of the blended learning model can be various, and it has been developed. At first, blended learning was learning in physical classes with a combination of several activities such as lectures, books, handouts, laboratories, and libraries. Currently, we have to carry out contextual learning, present problems and experiences, and develop online digital learning media. Blended learning is very appropriate for developing literacy for students. The research results from the two test groups of mixed and traditional students found that blended learning influenced learning and information literacy (Banyen et al., 2016).

Learning as a "continuous process" is the basis of blended learning development (Williams, 2013). Currently, literacy is a component that needs to be developed in the fields of technology and education. It is believed that the media is an effective literacy education tool. Blended learning is fun, flexible, conducive, useful, and motivating for students (Guzer & Caner, 2014). This is an indicator that the development of blended learning is appropriate for students in higher education who can organize learning activities, explore knowledge, and construct experiences.

Blended learning enables students' competence in 21st-century education that requires an increase in critical thinking skills by students using computerized or computer-based learning media, and it is even more effective than jigsaw learning models (Zarei, 2016). Blended learning makes progress in the learning system that can renew many aspects of teaching and learning activities to improve the expected quality of learning.

### *1.1. 2. Economic Literacy*

Literacy provides an understanding of how to interact with others, encouraging symbolic processes in creative development (Mielonen & Paterson, 2009). Students with good literacy will know the culture, history of their nation, and be able to build the future through learning experiences (Lewis-Spector, 2016; DeBoer, 2000). This remarks that literacy is related to culture and abilities fundamentally for students, which will trigger knowledge even in reading and writing. Another opinion states that literacy

is the ability to write and read that is used as a tool in culture to build symbolic meaning to be involved with something else (DeBoer, 2000).

The term literacy comes from the Latin *litteratus*, which means a learned person. On the other hand, McEachern (2017) defines economics as a science that studies the behaviour of individuals and society in making choices about scarce resources to enhance their quality of life. Therefore, the level of economic literacy can describe a person's ability to make choices about resources in his/her life. Economic literacy is a condition where an individual has an understanding of basic economic problems so that they can solve economic issues with the right decision (Murniatiningsih, 2017). Economic literacy provides basic skills for critical thinking, awareness of economic conditions, and the ability to make decisions regarding investment and savings for welfare.

Economics in formal education basically only provides basic concepts. This cognitive structure will become an economic learning experience in society. Economic theory is tested by phenomena, facts and data. Economics is useful for describing, defining, predicting and controlling. Students in economics learning are the future generation who learn from experience to make effective decisions. Financial literacy is knowledge and understanding of economic concepts, financial risk, and their application to make effective financial decisions (Organization for Economic Co-operation and Development, 2016). This is the basis for learning intelligence based on experience to build the economy of the future. Concerning Indonesia, economic and financial literacy is a national education program to boost the economic welfare (Financial Services Authority, 2017).

#### *1.1.3. Development of Multimedia Model E-Book*

The term media refers to something that carries information between the source of the message and the recipient as a communication process. Learning media is an effective messenger from educators to students so that there is an active-interactive communication process in forming competencies according to learning objectives. Media-based learning facilitates the achievement of learning objectives effectively with student-centred learning. Yusminar (2014) stated that e-books are electronic versions of traditional printed books that can be accessed through personal computers or other information technology devices that provide complete facilities in the form of audio, video, and text. Similarly, Anderson-Inman and Horney (1997) reinforced that e-book has an appearance that is not much different from traditional print books, which has sections like books that also have content, chapters, and pages that are structured on a particular theme to convey information online.

E-book Maker is software that can incorporate media files as learning material that is widely available both online and in the production of teachers in the form of photos, writing and others. It can be collected into e-books that can be uploaded to the internet. In the long run, lecturers can collect learning materials per chapter and complete the administration of learning. In this matter, students can learn online independently as the information, such as videos and questions, has been provided on the platform. The e-book is seen as one of the effective media that needs to be developed in blended learning, where some lectures present online meetings.

Besides, an e-book is one of the environmentally friendly learning media without using paper as raw material and heavy machinery that produces waste in its manufacture. The development of e-books in economics learning needs to optimize the methods and media. This research and development will be used to analyse learner-student analysis, state objectives-determining goals, select methods, media, materials-choosing methods, media and materials, utilize media and materials-using the media and

content, require learner participation-requires the participation of students, evaluate and revise-evaluation and revision (Heinich, 1996).

### **1.2. Related Research**

E-book learning based on macroeconomics is needed to enhance the effectiveness of learning in higher education, as well as to improve economic and financial literacy. Improved literacy can use blended learning as an alternative to the classroom and technology-based learning (Littlejohn & Pegler, 2007; Masitoh, 2018). Improved literacy can use blended learning as an alternative to the classroom and technology-based learning (Hoic-Bozic, Dlab & Mornar, 2016). In application, it is supported by technology-based media, presenting expert teachers, and describing complex learning with limited time.

Blended learning is not only acceptable but also highly preferred by students. Blended learning involves several constructivist principles, and the electronic teaching format is beneficial for learning development (Hubackova & Semradova, 2016). Heinze (2008) states that blended learning can improve learning outcomes equal to or higher than students who incorporate conventional face-to-face or fully online learning. The question raised is how to compose learning e-books that encourage students' competence.

Using the appropriate media selection, e-books become an effective source of information media in digital learning to deal with learning challenges (Lestari & Adi, 2016). The primary rationale is that it can provide interactive learning while the use of e-books for literacy that is still very rare (Asrowi et al., 2019; López-Escribano et al., 2021; Gohar, 2017), and increasing literacy has an impact on the formation of the cognitive structure and intelligence of learners (Afnita et al., 2021; Zhang et al., 2021; Yang et al., 2021). A prior study on the use of e-books as a learning medium has been provided in increasing the literacy of students in higher education institutions (Suparno, 2018). However, there is a minor study to deal with this issue, illustrating that there is a need for research to optimize student classes in exploring knowledge and experience.

According to Saptono (2018), it is remarked that the most important entrepreneurial skills are economic and financial literacy. Basic knowledge of finance, debt, investment, savings, and spending is essential for policymakers (Mitchell & Lusardi, 2015). Economic and financial literacy ultimately teaches how to manage economic and financial resources, debt, consumptive behaviour, and even unnecessary expenses (Lusardi & Tufano, 2015). Learning utilizes existing technological advancements, as well as following the progress of the modernization era where all activities are facilitated by online systems, e-book is an electronic system that provides easy access to information. The use of e-books has a positive impact on improving literacy skills and learning outcomes (Murti & Winoto, 2018). Kurniingsih and Ismayanti (2017) also stated that learning using e-book media is one of the programs launched by the government to increase school literacy activities, and it has become a potential source of electronic information.

### **1.3. Purpose of the Study**

Based on the background of the problem statement, previous researchers, and the development of studies based on theories from previous experts, this study aims to produce effective learning media products. Research and development of economic and financial literacy e-book learning media in macroeconomics courses are developed based on strict and verified stages by media experts, methods and students as users of the learning process. This study also intends to determine the process of developing macroeconomic learning tools in students' economic and financial literacy competencies.

Additionally, it develops an effective flash-based e-book multimedia learning model in blended learning and as reference material for further research in economic and financial literacy themes, as well as macroeconomics using blended learning.

## 2. Method and Materials

### 2.1. Research Model

This study involved a research and development design to produce a product in the form of an economic and financial literacy e-book. Borg and Gall (2003) stated that research and development are oriented toward research to develop and validate products used in education. The development is carried out as an e-book learning media for optimizing economic and financial literacy in macroeconomics courses in higher education. The developed media can be used as the main ingredient of blended learning and enables students to access it online. Economic and financial literacy is the basic material to be developed from the study of macroeconomic courses.

### 2.2. Participants

The e-book was revised based on input from the validator. At this stage, the steps taken are: validation, revision, limited (product trials), and further revisions. E-books on the development of economic and financial literacy in macroeconomic subjects are provided to support blended learning. It is validated by three lecturers based on online and media-based learning/e-books, three lecturers on macroeconomics subject, and 60 students as e-book users.

The Likert scale module assessment questionnaire data becomes the supporting data in the initial economics lab establishment trial. The evaluation qualification criteria are very valid (can be used without revision), valid (can be used with minor revisions), invalid (cannot be used), and very invalid (forbidden to use). The research was conducted at the Faculty of Economics, Jakarta State University in Indonesia. The subjects in this study were students of Economics and Accounting Education, consisting of three classes that were selected randomly as samples.

### 2.3. Data Collection

The series of steps in the development model is the four D model developed by Thiagarajan (1994) because the steps of the model can provide detailed direction to produce a clear product. 1). Define. Defining stage is a stage to determine the conditions for making an e-book. 2). Design. Instructors design learning tools to be implemented in learning using e-books, 3). Develop. This stage aims to produce a macroeconomic e-book design to develop good economic and financial literacy.

E-book media in the development of economic and financial literacy in macroeconomics courses as support for blended learning which is validated by media and online/e-book-based learning experts, macroeconomic subject matter experts, and students as users of learning e-books. Following are the respondents as experts for validation (see Table 2).

**Table 1. Overall Learning Media Validation Expert**

No.	Respondents	Number of experts
1	E-book media expert	2 experts
2	Macroeconomics content expert/lecturer	2 experts
3	Literacy development expert	2 experts
4	Student users of economic and financial literacy e-book	60 students

The module assessment questionnaire data with a Likert scale becomes supporting data for the trial of establishing an early economics lab. The assessment qualification criteria adapted from Akbar and Sriwiyana (2010) are shown in Table 3 below:

**Table 2. Percentage Analysis Validation Criteria**

No	Criteria	Validity Level
1	75.01% – 100.00%	very Valid (can be used without revision)
2	50.01% – 75.00%	valid (usable with minor revisions)
3	25.01% – 50.00%	invalid (cannot be used)
4	00.00% – 25.00%	very invalid (forbidden to use)

## 2.4. Data Collection Process

The data collection process begins with the distribution of economic and financial literacy e-book products in macroeconomics courses. Furthermore, researchers acquire suggestions and improvements from media experts, macroeconomic learning content, and students as users of the learning process. A questionnaire with a Likert scale with five choices was given to provide an assessment in the development of research.

## 2.5. Data Analysis

The development test assessment instrument uses a Likert scale with five answer alternatives. From this assessment, the average score is then seen, and the feasibility is interpreted using the Aiken index as a feasibility test of validity. Limited-scale trials to determine student responses to the media that have been made and assess the feasibility of the media to be used. Furthermore, the data were processed quantitatively and descriptively with SPSS 25 statistical software.

## 3. Results

Media development through the stage is carried out with the needs analysis, student analysis, learning objectives analysis, analysis of graduate competencies and subject core competencies, followed by learning objectives. In implementing advanced activities with learning content, effective media selection, learning design, and initial design is carried out. The development of learning tools that have been compiled is continued with revisions and improvements based on suggestions from expert validators. The process uses expert validation, revisions based on suggestions for improvement, the trial of e-book learning media products in a limited class scale, and final revisions based on input on the effectiveness of students' use of media in class.

### 3.1. Define

Learning media overcomes the limitations of students' learning experiences from the learning process in the classroom. The initial abilities of students are different, requiring suitable media to equalize perceptions about learning and goals. Effective media achieve learning objectives. Outdoor learning, presenting contextual objects and problems and designing interactive learning environments. E-books can present web links, models, pictures, miniatures, and audio-visually. Hypermedia consists of hyperlinks and hypertext, capable of being presented by flash-based e-book learning media. Learning media facilitates students' limitations in learning that depend on one learning source. "Student learning style is the design of the teacher and learning media", and "Student learning achievement is a potential competency map that can be optimized by the instructor". The suitable learning media can provide a complete learning experience.

Competencies that students in general in macroeconomics must master are related to economic literacy, and learning plan that can be designed in face-to-face and online models. Macroeconomics

discusses the essential components of economics, especially the macro aspects of a nation. The discussion mainly covers the understanding of the economy in aggregate, starting with the concept of national income, the mechanism of determining national income, consumption theory, investment theory, employment, inflation, investment - saving and liquidity - money analysis, fiscal and monetary policy, the role of money and banks, and international trade.

Learning outcomes from the macroeconomics course are expected to identify and recognize problems in macroeconomics. Identify and measure national income and economic growth to calculate, describe, and interpret real conditions in the field. Know and define national income balance theory so that you can calculate, draw and interpret national income balances in two, three and four sectors. Macroeconomics learning outcomes are also intended to know, define, calculate and draw curves related to consumption theory, investment theory, understand employment and analyse labour issues, identify and define fiscal policy and resolve fiscal problems in Indonesia, define and recognize equilibrium in the money market and goods market, constructing investment - saving and liquidity - money curve. It also analyses the impact of monetary and fiscal policies, identifying and defining money, banks and monetary policy, so that they can identify monetary problems in Indonesia. Lastly, defining and identifying international trade and globalization that enables to recognize of the various impulses and obstacles in international trade.

Based on the program learning outcomes and course learning outcomes that is previously mentioned, the materials and aspects of literacy developed are included in the learning media. Even learning media are able to present independent learning on the analysis of the relationship between interest rates ( $r$ ) and income ( $Y$ ), and represent various equilibrium combinations in the goods market and money market.

### 3.2. Design

This stage aims to design a learning e-book media that is tailored to Blended learning and focuses on aspects of Macroeconomic literacy. Learning development activities are carried out by developing core and basic competencies by the instructor. Structured in the program learning outcomes and course learning outcomes above, then carried out: (1) arranging lecture plans with literacy material introduction to macroeconomics, (2) developing learning resources, (3) arranging and cutting videos, (4) arranging into PowerPoint presentation, (5) converting to image input, (6) creating an e-book, (7) adding exercises about, (8) sound, interactive music, and editing the e-book to make it more interesting.

The steps for making an e-book are as follows: (1) install the e-book maker on the computer and run the application so that the appears shortcut icon on the screen desktop. Various images flash e-book, then click the shortcut icon e-book maker as shown above to run the application and start working. (2) After the application is open, please select the open menu, (3) we fill in the import PDF, SWF, JPG, or video from the file that we have prepared for the e-book, 4). Click the video image, pdf, etc. the desired file can be displayed in the e-book by clicking the edit option. (5) Please choose the effect for each page and we can add the sound on the page edit, we can choose the theme for e-book, (6) continue publishing with the save file display options and the final results to be operated. (7) The final results are take as e-books in the form of html, SWF, 3gp, mp4 and we are ready to show in learning together with students.



### 3.3. Develop

Media development at this stage produces effective learning media. The e-book media that has been compiled is developed based on suggestions for improvement from the validator. The steps at this stage are validation, revision, product trials, and further revisions.



Figure 1. Economic and Financial Literacy E-book

Many websites provide free e-books and we can design and develop them easily, such as: <https://fliphtml5.com/>. The results of learning media can be accessed including by displaying on the web as follows: <https://online.fliphtml5.com/tmrss/baop/>.

### 4. Discussion

From the feasibility test conducted by material experts and media experts, several things need to be improved, added or eliminated. The following are things that need to be revised (see Table 1).

**Table 3. Matters that need to be revised in the development of media Literacy E-books Supporting Blended Learning**

Aspect	Improvement	Revision
Material	Needs to improve program learning outcomes and course learning outcomes, less material in depth	Developing program learning outcomes and course learning outcomes in lesson plan material on the subject of macroeconomics
	Exercise exercises, literacy still lacks	Adding exercises, and economic literacy
Media	The display of each e-book slide is of poor colour and size so that it is difficult to learn	Arrange the display to be more attractive, enlarge the size of the e-book
	Font and background colours do not contrast on several long sheets of writing cover the footer some menus do not work well	
	Font sizes on several sheets are very small	
	Video and soundless	Adding video and sound to the practice questions and learning problems as an introduction

The development of learning media was validated by three material experts (macroeconomics lecturers). Material experts gave an average score of 3.92 and it posits in the high category. It indicates that in terms of content, learning media is able to provide economic and financial literacy competence

in learning. With the highest score in the material wrinkles logically and the lowest was the grammar used in literacy in both categories to be continued for the next stage (see Figure 2).



Figure 2. Expert Validation Score of Content Economic Literacy Material

Subsequently conducted a validation test by the media expert with the highest score is the layout selection does not cause selective attention and lowest text and image composition, the average validation score is 3.78 which is included in the high category. Learning media is able to convey economic and financial literacy learning well (see Figure 3).

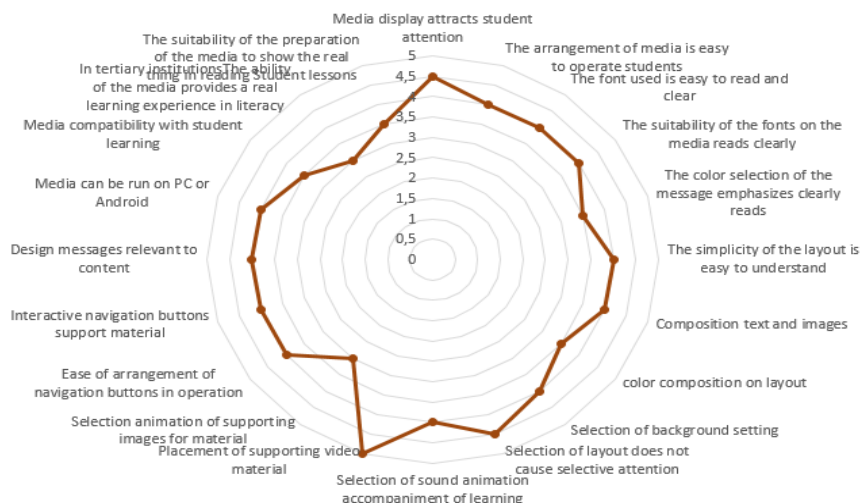


Figure 3. Media Expert Validation Score

A trial was conducted on 60 students of the Economics and Accounting Education Study Program. The highest score is that "this e-book learning media can display outdoor learning well" and the lowest score is "I can run media e-book on a PC or Android", obtained a score with an average value of 3.78.

With a high score in the "acceptable and continued" category, the e-book learning media is ready to be tested in classroom learning.

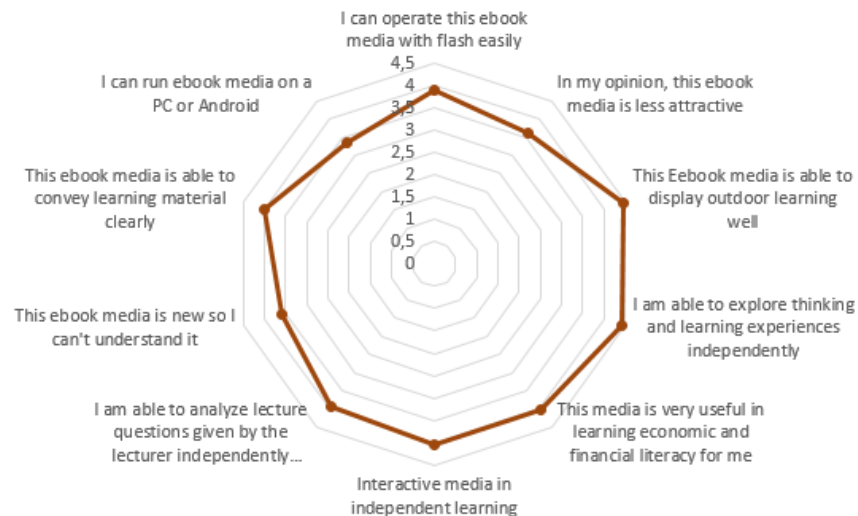


Figure 4. Student Learning E-Book Questionnaire Scores

The use of effective technology in blended learning supports Tang and Chaw's research (2016) which examined university students in Malaysia who have applied blended learning in their learning model and found that out of 161 respondents, a comparison of 74.5% and 63.9% of respondents agree that conventional learning face-to-face in the classroom and online learning is good. Employing blended learning, respondents also gave positive answers that were seen in the results of the statement that the receipt of information originating from activities was browsing considered effective by juxtaposing the statement that receiving information originating from physical sources with 70.2% and 63.4% percentages, respectively. The ability to balance face-to-face learning is needed in blended learning.

A prior study by O'Toole and Absalom (2003) noted that blended learning is an innovation that can provide progress. Without ignoring the traditional learning model that entirely teaches various personalities and character formation, blended learning requires the instructor's role in the ability to use methods and media effectively. Besides, teachers must understand that in utilizing technological advances and continuing to adapt to existing developments, self-knowledge about education is a good result. From these conclusions, the use of interesting media will give a good impression.

## 5. Conclusion

The results of research and development in this study resulted in a product in the form of macroeconomic e-book multimedia and it supports economic and financial literacy with blended learning. The study also found that the stages carried out in this research and development are as follows: (a) defining the development of lesson plan through program learning outcomes and course learning outcomes, (b) designing media design and learning resources, (c) developing e-books with literacy through validation of media experts, material experts, and scale trials limited to students.

Furthermore, based on the trial evaluation conducted by media experts, it is concluded that the e-book media supports economic and financial literacy in macroeconomics courses, and it can be decided to be good. Also, trial evaluation revealed that e-books can be used as a reference for learning in tertiary institutions. It is subsequently uploaded on the blended learning page on the web feunj.ac.id. Lastly,

based on input from media experts and Macroeconomics learning e-book material needs to be further appropriately developed and learning material needs to be enriched with more interactive media.

The implications of this research and development are provided as follows. First, economic learning can use the e-book as a medium to support macroeconomic literacy material for students. It can be developed and implemented to enhance students achieving learning objectives effectively and efficiently. Second, the macroeconomics course in higher education with e-book media can be well prepared, planned and structured by lecturers to facilitate the implementation of learning. However, since the small-scale student research trials, the lack of widespread media of the e-book.

## 6. Recommendations

This research and development of economic and financial media literacy have several limitations as it solely focuses on one macroeconomics course competency. The sample is on a limited research scale, only carried out in three classes with 60 students. It is therefore, the researcher suggests developing learning e-books on other subject competencies on a wider scale. The learning media developed can also be designed based on flash hyper media with hypertext and hyperlinks. The effectiveness of the media on a broader scale, researchers recommend experimental research in enhancing students' learning outcomes.

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