

Received: 16 April 2021

Revision received: 22 December 2021

Accepted: 27 February 2022

Copyright © 2022 JESTP

[www.jestp.com](http://www.jestp.com)

DOI 10.12738/jestp.2022.1.0006 ♦ January 2022 ♦ 22(1) ♦ 62-77

Article

## Development of E-book Teaching Materials in Improving Student Literacy

Jasrial

Universitas Negeri Padang 1, Indonesia

E-mail: [jasrial@fip.unp.ac.id](mailto:jasrial@fip.unp.ac.id)

Sulastri

Universitas Negeri Padang 2, Indonesia

E-mail: [sulastri@fip.unp.ac.id](mailto:sulastri@fip.unp.ac.id)

Andra Saputra

Universitas Negeri Padang 3, Indonesia

E-mail: [andrasaputra552@gmail.com](mailto:andrasaputra552@gmail.com)

Muhammad Kristiawan

Universitas Bengkulu 4, Indonesia

E-mail: [muhammadkristiawan@unib.ac.id](mailto:muhammadkristiawan@unib.ac.id)

### Abstract

Literacy is an important quality that must be owned by every student because it can develop a culture of reading, writing, listening, speaking, and understanding information ability analytically, critically, and reflectively. These skills are used to build the creative and productive students for challenging goals, because most of the educational process especially at University, need the ability and literacy awareness of students. This research aimed to develop Teaching Materials in the form of E-books in improving Student Literacy in the Education Administration Study Program of the Faculty of Education, Universitas Negeri Padang, Indonesia. The research used research & development (R&D) methods assisted by the 4-D model of Define, Design, Develop, and Disseminate. The needs analysis stage consisted of problem analysis, learning objective analysis, context analysis, student analysis, and content analysis and curriculum. The subjects of this study were students of the Education Administration study program of the Universitas Negeri Padang of Indonesia. The data was collected using a questionnaire. The result of the product Material Aspect validity was 95%, that of the Product Media aspect validity test was 85.5%, that of the Trial Validity of the Product Language Aspect was 96.25%. It showed that the product was very valid with an average figure of 90.92%. The result of Practicality Test analysis from lecturers was 96.66% and Student Practicality Trial results was 91.7%. The result of the analysis of the increased in literacy from students of information literacy level was 80.25%, Media Literacy was 80.33%, Digital Literacy was 80.25%. The researcher concludes that the development of e-book teaching materials can be used in improving student literacy because it has been implemented with a valid, practical, and effective development process.

### Keywords

Teaching Materials, E-books, information literacy, Media Literacy, Digital Literacy

---

Correspondence to Jasrial, Universitas Negeri Padang 1, Indonesia, E-mail: [jasrial@fip.unp.ac.id](mailto:jasrial@fip.unp.ac.id)

Citation: Jasrial, Sulastri, Saputra, A., Kristiawan, M. (2022). Development of E-book Teaching Materials in Improving Student Literacy. *Educational Sciences: Theory and Practice*, 22(1), 62 - 77. <http://dx.doi.org/10.12738/jestp.2022.1.0006>

---

## Introduction

Literacy is considered as one of the solutions that can increase creativity and develop students' critical thinking, and which can improve the quality of education in Indonesia. Some researchers argue that in order to see the progress of a nation, one should look at the literacy culture of its citizens (Yanuarti & Sari, 2019). The results of the Programme for International Student Assessment (PISA) study released in 2018 by the Organization for Economic Co-operation and Development (OECD) showed that Indonesia's literacy ability to read, had achieved an average score of 371, with an average OECD score of 487. This shows Indonesia is in the low-performance quadrant with high equity (The Organisation for Economic Co-operation and Development, 2019).

The role of literacy becomes a benchmark for the progress of a society that has a long impact on increasing competitiveness (Yaşar, 2020). Literacy contributes a major influence on the world of education and socioeconomics (Hidayati et al., 2020). Literacy is directly related to human resource development (Lin & Lu, 2018). It is the process of reading, writing, speaking, listening, seeing, and opinion (Spector, 2015). For students to improve literacy skills are needed in the process of restoration (Cencelj et al., 2019). The higher the literacy ability of students, the greater is their academic achievement, the lower the literacy ability of students, the lesser is their academic achievement. Literacy becomes the main supplement for students in developing creativity, mindset, reasoning power, and critical thinking (Rais et al., 2019). Literacy that continues to be cultivated can make student productivity increase (Pujiatna et al., 2020).

Sari and Pujiono (2017) studied about literacy culture in FBS UNY students, and obtained the result that reading activities were carried out through reading tasks as much as 60%, while only 11% like to read. Writing activities were found in the range of 17%-40% while demand of these courses was much as 25-42%. Students who associate reading and writing activities reached 53%. Based on existing data, it could be concluded that literacy culture of students mostly was caused by assignments from lecturers, and the literacy culture students was caused by their interests. Besides, assignments from lecturers were very small percentage. Students read because they were based on a desire to acquire knowledge which supported lectures that reading was useful for their lives (Petrus et al., 2020). The college environment is a strategic place to improve student literacy skills, improve student literacy skills in college can help improve student reading culture and critical thinking, either through conventional media or modern media (Agustina et al., 2021). Literacy skills will affect students in understanding lecture materials (Firdaus & Sukiman, 2020). To help students in improving literacy and understand the learning material, it is needed to develop a teaching material that can make students learn without pressure and can be read by students anytime and anywhere.

One of the learning materials that can be used by students and lecturers at university to improve student literacy is electronic book learning materials (E-books) (Muswita et al., 2018). Digital Book (E-book) is a digital printed book that consists of text, images, videos, and sounds that can be read on computers, phones, smartphones, gadgets, and other electronic devices that serve to convey information with interesting forms (Jannah et al., 2017) and (Cipta., 2019). The development of this e-book is a step to provide fun, easy and practical learning so that students can read learning materials anywhere and anytime, and can read them on smartphones and gadgets (Hadaya et al., 2018) The existence of student e-book teaching materials becomes more active, critical, independent and increase literacy and reading interest from students (Smaldino et al., 2008).

The researchers encountered the phenomena directly on campus, when the students depended much on the digital world such as social media and the internet. The researchers thought that the students were addicted to the Internet. This situation was encountered during a discussion forum in the class, when the lecturer gave a case or a task, the students searched the internet more than reading books to answers the question. The problems were supported by the data obtained through questionnaires about measurement of literacy levels that researchers shared with students of The Education Administration Study Program of the Faculty of Education, Universitas Negeri Padang. Table 1 presents the basic level of understanding of students' literacy.

**Table 1.** Basic Level of Understanding of Student Literacy UNP FIP AP

No	Literacy	Respondents	Average	Level
1	Information literacy	20	73.5	Low
2	Media literacy	20	74.1	Low
3	Digital literacy	20	66.7	Low

Source: Student Questionnaire Charging Data

Table 1 shows the level of Student Information Literacy ability at the average of 73.5, average of Student Media Literacy skills at 74.1, and average of Students' Digital Literacy skills at 66.7. The research focused on developing an e-book material teaching that can improve the literacy skills of The Education Administration Study Program of the Faculty of Education student at Universitas Negeri Padang, during Management Psychology.

Based on the research focus, the purpose of the research was to find out the validity, the practicality, and the effectivity of e-book products. The research was conducted to help students in the learning process during the COVID19 pandemic based on the research question: How does the process of developing e-book teaching materials improve the literacy skills of The Education Administration Study Program of the Faculty of Education student at Universitas Negeri Padang?

### Literature Review

Literacy is an important process for every human being before humans can access knowledge properly, so it can be said that literacy is an indicator of the quality of life of every human being. The role of literacy is also a benchmark for the progress of a society that has a long impact in increasing competitiveness (Umut Zan et al., 2020). Literacy contributes greatly to the socio-economic impact. Therefore literacy is directly related to the development of human resources and supports poverty alleviation (Deliveli, 2021; Hidayati et al., 2020). Literacy in a narrow sense, namely literacy as the ability to read and write. The ability to read and write is very necessary to build a critical and creative attitude towards various life phenomena that are able to foster refinement, solidarity and as a form of efforts to preserve the nation's culture (Agustina et al., 2021; Alkhalidi, 2021).

Literacy is the process of reading, writing, speaking, listening, seeing and expressing opinions. The higher the media literacy ability of students, the greater is their academic achievement. On the other hand, the lower the media literacy ability, the lesser is the academic achievement. Literacy is the main supplement for students in developing their creativity, mindset, reasoning power, and criticality. Literacy is continuously cultivated by the ability to increase students' productivity. In addition, a culture of literacy can be used as a strong foothold to avoid the increasingly complex selection of life (Çoklar et al., 2017). Muswita et al. (2018) argue that good literacy skills will help the younger generation understand information both verbally and in writing. In everyday life, literacy mastery in the younger generation is very important to support the competencies they have (Phuapan et al., 2016; Sagarik, 2021). Therefore, literacy activities should become a routine that exists at every level of formal education, from elementary school to university. In America, a study on literacy was conducted to show the importance of reading literacy and the relationship between age level and reading ability level (Danielsen & Valaker, 2021; Kim, 2019).

E-books contained digital information in the form of text, images and audio that were packaged in a file. E-books can be opened using computers or other electronic devices depending on the developer at the time of developing it (Raihan et al., 2018). E-books are considered suitable to be developed as learning media in scientific courses. The development of e-books is expected to simplify and streamline the user's time in the subject matter (Vassiliou & Rowley, 2008). The e-book developed will be equipped with a search feature, practice questions, and equipped with pictures to facilitate understanding of the material (Wahyuni & Rahayu, 2021; Waško, 2021). E-books can be one of the teaching materials prepared in online learning with students (Alnabulsi & Salameh, 2021; Yusmar et al.). E-books are usually independent, meaning that students can learn independently because they are systematic and complete (Al-Sharah et al., 2021; Aljazzazen & Schmuck, 2021; Mawarni & Muhtadi, 2017; Sahib & Farag, 2021).

Based on the research that has been done, it can be said that e-books get a positive response and can be accepted in the learning process. Furthermore, it is recommended that e-books can be used during learning or as independent study materials for students so that it is easier to understand the material and can be used as complementary learning materials for lecturers and students. In this study, researchers expanded the scope of e-book development so that it could be developed on android devices with better capabilities.

### Research Methodology

The research was conducted using research and development (R&D) methods. The development was carried out using 4-D models namely Define, Design, Develop and Disseminate (Thiagarajan, 1974). The needs analysis stage consisted of problem analysis, learning objective analysis, context analysis, student analysis, and content/curriculum analysis. The data from the needs analysis was collected using interview techniques, observations, and questionnaires. The validity of the product was carried out by expert validation by its substance. The sample in this study was students of the Educational Administration study program of the Faculty of

Education, Universitas Negeri Padang on Management Psychology Courses. Based on the level of literacy and intellectual development of students who attended this class in the last 2 years, and all students have reached the maturity of thinking and were classified as adult learning or andragogy. The instruments used in this research were field observation, where the researchers observed directly how the students learned and what was their level of literacy ability; questionnaires filled by validators to measure the level of product validity; questionnaires filled by students and lecturers about the practicality of a product; and questionnaires to see the development of student literacy; and documentation studies. The data analysis was carried out first by validating data using the Likert scale based on the validation sheet. Giving validity values using formulas:

$$v = \frac{f}{n} \times 100\%$$

Description:

v: validity value

f: the score obtained

n : maximum score (Riduwan, 2011)

**Table 2.** Scale Validity Rate Category 0%-100%

No.	Percentage	Validity
1	81% - 100%	Very valid
2	61% - 80%	Valid
3	41% - 60%	Valid enough
4	21% - 40%	Less valid
5	0% - 20%	Invalid

(Suharsimi, 2014)

Practicality Analysis uses the Likert scale based on the practicality sheet. Administering practical values using formulas:

$$p = \frac{f}{n} \times 100\%$$

Description:

p: practical value

f: the score obtained

n : maximum score (Riduwan, 2011)

**Table 3.** Scale Practicality Level Category 0%-100%

No.	Percentage	Criteria
1	81% - 100%	Very practical
2	61% - 80%	Practical
3	41% - 60%	Quite practical
4	21% - 40%	Less practical
5	0% - 20%	Impractical

(Suharsimi, 2014)

Analysis data of student literacy improvement using the following formulas:

NP :  $\frac{R}{SM} \times 100\%$

SM

Description:

NP : Expected percent value

R : Raw score obtained

SM : Maximum score (Sugiyono, 2014)

**Table 4.** Assessment Criteria for Improving Student Literacy

No.	Percentage	Criteria	Conversion
1	90% - 100%	Excellent	Very High
2	80% - 89%	Good	Tall
3	65% - 79%	Enough	Quite High

4	55% - 64%	Less	Less High
5	0% - 54%	Less Once	Not high

(Suharsimi, 2014)

## Research Results

### 1. Define Stage

#### a. Curriculum Analysis Results

The result of the curriculum analysis determined the course of Management Psychology in the Educational Administration Study Program of the Faculty of Education, Universitas Negeri Padang,

#### b. The results of the formulation of learning objectives

The learning objectives were obtained through the analysis of program plans and semester learning activities (RPKPS) management psychology courses such as providing knowledge philosophically-theoretically and practically to students by mastering concepts in-depth and being able to explain them in their language.

#### c. Results of Analysis of characteristics of learners

The sample in this study were students of the Educational Administration Study Program of the Faculty of Education, Universitas Negeri Padang on Management Psychology Courses. Based on the level of literacy and intellectual development of students who attended this lecture in the last 2 years, the literacy that students had achieved was classified as adult learning or andragogy.

#### d. Results of Material Analysis

The result of the material analysis through RPKPS Management Psychology courses obtained 7 topics of discussion. The topics of discussion were included in the *E-book* that was to be used by students of the Education Administration Study Program of the Faculty of Education, Universitas Negeri Padang, in order to improve the literacy in Management Psychology Courses.

### 2. Design Stage

#### a. Design of Program Plan Assessment Instruments and Semester Learning Activities (RPKPS)

The instrument indicator of the RPKPS assessment can be seen in table 5:

**Table 5.** RPKPS Assessment Indicators (Program Plan and Semester Learning Activities)

RPKPS	Aspects	Items
Management Psychology Courses	Identity of the Course	1 Statement
	Formulation of Indicators	2 Statement
	Formulation of Learning Objectives	2 Statement
	Selection of Teaching Materials	2 Statement
	Learning Resource Selection	2 Statement
	Learning Media Selection	2 Statement
	Learning Methods	2 Statement
	Learning Scenarios	3 Statement
	Valuation	2 Statement
Language	1 Statement	

The validity trial results of RPKPS assessment instrument was 95%. It shows that the result is very valid.

#### b. Results of Student Literacy Instrument Design

Instrument Indicators of Student Literacy before and after learning can be seen in the table 6.

**Table 6. Literacy Instrument Indicators**

No	Aspects	Variable	Items
1.	Aspects of Literacy	Information Literacy	15 Statements
		Media Literacy	10 Statements
		Digital Literacy	10 Statements
<b>2</b>	<b>Total</b>		<b>35 Statements</b>

The result of the trial of Student Literacy Instruments was 90%. It was very valid and it could be used for the Assessment of Student Literacy.

*c. Product Practical Instrument Design Results*

Instrument indicators of practicality can be seen in the table 7.

**Table 7. Product Practical Instrument Indicator**

No	E-book Products	Items	
1	Practical Aspects	Ease of Use	4 Statements
		Benefits	3 Statements
		View	3 Statements
		Presentation of Materials	3 Statements
		Evaluation	2 Statements
<b>2</b>	<b>Total</b>	<b>15 Statements</b>	

The result of the Instrument's Validity Trial was 95%. It is very valid and it can be used for the assessment of Student Literacy.

*d. Results of Product Validity Instrument Design*

Indicators of product validity instruments can be seen in the table below.

**Table 8. Instrument Indicator of Material Validity**

No	Validation Aspects	Indicators	Items
1	Validity of Material	Material Conformity with KD	5 Statements
		Accuracy of Materials	5 Statements
		Material Update	5 Statements
		Encouraging Curiosity	5 Statements
		Businesslike	4 Statements
2	Validity of Language	Communicative	6 Statements
		Dialogical and interactive	2 Statements
		Conformity with the development of learners	4 Statements
		By language rules	2 Statements
		Use of terms, symbols, or icons	2 Statements
3	Media Validity	Serving	5 Statements
		Graphs	5 Statements
		E-book Size	5 Statements
		E-book Design	5 Statements

The result of the Assessment Instrument Validity Trial is 90%. It is very valid and it can be used for Assessment of Product Development

*e. Product Flowchart Design Results*

**Table 9. Story Board E-book Research Products**

No	Visual	Content	Audio
1	Cover	The cover has blue background, an image of the head and light bulb and the UNP logo, also there is a writing “Psychology Management” and the name of the creator	Instrument Music
2	Foreword	This sheet describes the early introduction	Instrument Music
3	Video	This sheet describes the initial introduction about materials that has been made	Instrument Music
4	Table of Contents	This sheet contains a list of chapters and sub-materials that will be discussed in the material.	Instrument Music
5	Chapters	The sheet of each chapter in the picture and the purpose of the chapter will be studied	Instrument Music
6	Material	On the sheet on each material give a sub-chapter that will explain the material that is equipped with images along with explanations, and animated videos of each sub-chapter.	Instrument Music
7	Question	This sheet shows questions about the material discussed.	Instrument Music

**3. Develop Stage**

*a. Product Manufacturing*

To create the product, the researchers used three applications: a) Adobe Photoshop, b) Microsoft Office, c) Flip PDF Corporate 2.4.10 Multilingual Portable. The initial design of product used Photoshop applications, then the material design used Microsoft office and the final design used Flip PDF Corporate 2.4.10 Multilingual Portable. The appearance of the products produced in this study can be seen in the image below.



**Figure 1. Display of E-book Teaching Materials Products**

*b. Product Validation*

*1) Percentage Validation of Material.*

**Table 10. Material Validation Results**

No	Aspect Description	Validator	Score
1.	Material completeness	1	4
2.	Breadth of material	1	3
3.	Depth of material	1	4
4.	Accuracy of concepts and definitions	1	4

5.	Accuracy of data and facts	1	4
6.	Accuracy of examples and cases	1	3
7.	Accuracy of images, diagrams, and illustrations.	1	4
8.	Accuracy of terms	1	4
9.	Accuracy of notation, symbols, and icons	1	4
10.	Accuracy of library references	1	4
11.	Conformity of material with the development of management psychology	1	3
12.	Examples and cases provided	1	4
13.	Images, diagrams, and illustrations provided	1	4
14.	Using examples of cases that are in the surroundings	1	4
15.	The Impossibility of Library	1	4
16.	Encourage curiosity	1	4
17.	Creating the ability to ask questions	1	4
18.	Creating critical thinking skills	1	4
19.	Encourage the willingness to learn	1	4
20.	Encourage the ability to analyze problems	1	3
<b>Sum</b>			<b>76</b>
<b>Average</b>			<b>95%</b>
<b>Validity</b>			<b>Highly Valid</b>

Based on the result of validation by expert validator, the material on the E-book was very valid and the score of average was 95%.

2) *Percentage of Media Validation.*

**Table 11.** *Media Validation Results*

No	Aspect Description	Validator	Score
1.	Layout view on balanced E-book	1	4
2.	Selection of interesting background colors to see	1	4
3.	The overall color display is interesting to see	1	4
4.	Selection of interesting typefaces to look at	1	4
5.	The selection of letter sizes is easy to read	1	4
6.	The placement of the navigation buttons used is appropriate	1	3
7.	The supporting music used is appropriate.	1	3
8.	Videos used are interesting to view	1	3
9.	Images used to be interesting to view	1	4
10.	The sound in the video is heard.	1	3
11.	There is a button with a butt command	1	3
12.	Button commands are easy to operate	1	3
13.	Instructions for using e-books are clear	1	3
14.	Placement of decorations/illustrations as a background does not interfere with the title, text, page numbers	1	3
15.	Placement of titles, subtitles, illustrations, and image captions does not interfere with understanding	1	3
16.	Don't use too many typefaces	1	3
17.	The use of letter variations (bold, italic, all capital, small capital) is not excessive	1	3
18.	Able to express the meaning/meaning of objects	1	3
19.	Accurate and propositional form by reality	1	3
20.	Creative and dynamic	1	3
<b>Sum</b>			<b>66</b>
<b>Average</b>			<b>82.5%</b>
<b>Validity</b>			<b>Valid</b>

Based on the result of Media Validation by media expert validators, the E-book product in this study has showed valid with an average of 82.5%.

3) *Percentage of Language Validation.*



**Table 12.** *Language Validation Results*

No	Aspect Description	Validator	Score
1.	The language used according to Spelling Indonesian in the rules of Indonesian.	1	4
2.	The words used are easy to understand.	1	4
3.	The sentence used is unambiguous.	1	4
4.	The language used is communicative.	1	3
5.	The language used in accordance with the level of understanding of the student	1	4
6.	The sentences used are easy for students to understand to learn independently.	1	4
7.	The use of language can support students' understanding.	1	4
8.	The use of simple language so that messages from lecture materials are conveyed.	1	3
9.	The terms used are consistent so that they are easy to understand.	1	4
10.	Ability to improve the literacy of students	1	4
11.	Ability to encourage critical thinking	1	4
12.	Ability to analyze problems	1	4
13.	Able to manage the messages and information presented	1	3
14.	Conformity with the intellectual development of students	1	4
15.	Conformity with the level of development of student literacy	1	4
16.	Grammatical accuracy	1	4
17.	Consistency of symbol use	1	4
18.	Consistency of use of the term	1	4
19.	Consistency of icon usage	1	4
20.	Effectiveness of sentences in e-books	1	4
<b>Sum</b>			<b>77</b>
<b>Average</b>			<b>96.25%</b>
<b>Validity</b>			<b>Highly Valid</b>

In this case, the researchers asked to linguists as validators, more over about the using of conjunction at the beginning in a sentence. The researchers believed that the suggestions were given by language validators which could be used as inputs and guidelines in improving e-book products or revising it.

**Table 13.** *Recapitulation of Product Material, Language, and Media Validation*

No	Aspect	Validator	Percentage (%)	Category
1	Material	1	95%	Highly Valid
2	Media	1	82.5 %	Valid
3	Language	1	95.25 %	Highly Valid
Sum			272.75	
Average			90.92%	
Validity				Highly Valid

According to validity, E-book Products are very valid. It can be seen in table 12, which displays recapitulation of materials, languages, and media. Next, the results of the analysis of the validity of the material, language, and media can be seen in the Figure 2.

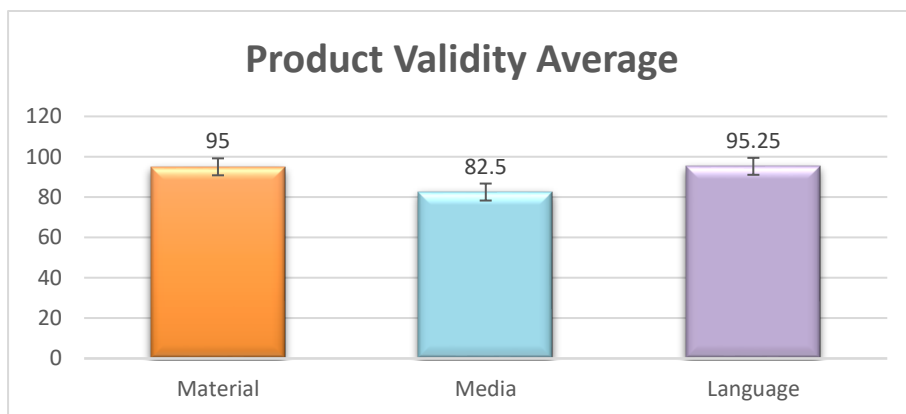


Figure 2. Graph of validity test results

The score obtained from the validator on each indicator was valid and all three aspects: Media, Material, and Language, all were prepared completely and according to the students’ needs. There were some comments or suggestions given by validator on the assessment sheet. These comments can be used as inputs and guidelines in revising the product of research.

c. Product Practicality

1) Lecturer Practicality Test

The results of the lecturer's practicality assessment can be seen in the table 14:

Table 14. Results of Lecturer's Response to Product Practicality

No	Statement	Respondents	Score
1.	Easy-to-understand instructions	1	4
2.	The language used is easy to understand.	1	4
3.	The e-book navigation button is easy to use	1	4
4.	The message conveyed in the E-book can be received.	1	4
5.	E-books can increase motivation in learning.	1	3
6.	E-books can be used at any time.	1	4
7.	E-book presented can train independence in learning	1	4
8.	The text on the e-book can be read clearly.	1	4
9.	View on interesting e-book	1	4
10.	Background according to content	1	4
11.	E-books are easy to understand in the learning process	1	4
12.	The meter presented in the E-book is complete	1	4
13.	Systematic E-book by the competence of students	1	4
14.	Problems in the E-book by the material studied	1	4
15.	Test questions on e-books by learning objectives	1	3
<b>Sum</b>			<b>58</b>
<b>Average</b>			<b>96,66%</b>
<b>Category</b>			<b>Very Practical</b>

Table 13 shows that the average percentage of lecturer response assessments to management psychology courses was in a very practical category with a percentage of 96.66%, very practical.

2) Student Practicality Test

To sum, the practical results of student response to e-book products can be seen in table 15:

**Table 15. Results of Student Response to Product Practicality**

No	Statement	Respondents	Score
1.	Easy-to-understand instructions	20	94
2.	The language used is easy to understand.	20	94
3.	The e-book navigation button is easy to use	20	95
4.	The message conveyed in the E-book can be received.	20	88
5.	E-books can increase motivation in learning.	20	93
6.	E-books can be used at any time.	20	94
7.	E-book presented can train independence in learning	20	87
8.	The text on the e-book can be read clearly.	20	90
9.	View on interesting e-book	20	90
10.	Background according to content	20	94
11.	E-books are easy to understand in the learning process	20	89
12.	The meter presented in the E-book is complete	20	92
13.	Systematic E-book in accordance with the competence of students	20	94
14.	Problems in the E-book in accordance with the material studied	20	93
15.	Test questions on e-books in accordance with learning objectives	20	89
<b>Sum</b>			<b>1376</b>
<b>Average</b>			<b>91.7%</b>
<b>Category</b>			<b>Very Practical</b>

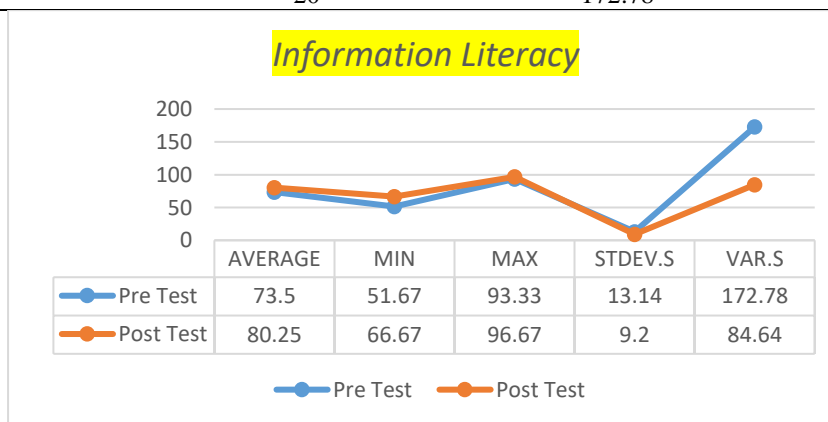
Based on table 14, it is seen that the percentage of student response to practicality is 91.7% with a very practical category.

### 3) Product Trial Results

The practical results of student information literacy analysis to e-book products can be seen in table 16 and Figure 3:

**Table 16. Results of Student Information Literacy Analysis**

Variable	Respondents	Pre Test	Post Test
AVERAGE	20	73.5	80.25
MIN	20	51.67	66.67
MAX	20	93.33	96.67
STDEV.S	20	13.14	9.2
VAR.S	20	172.78	84.64

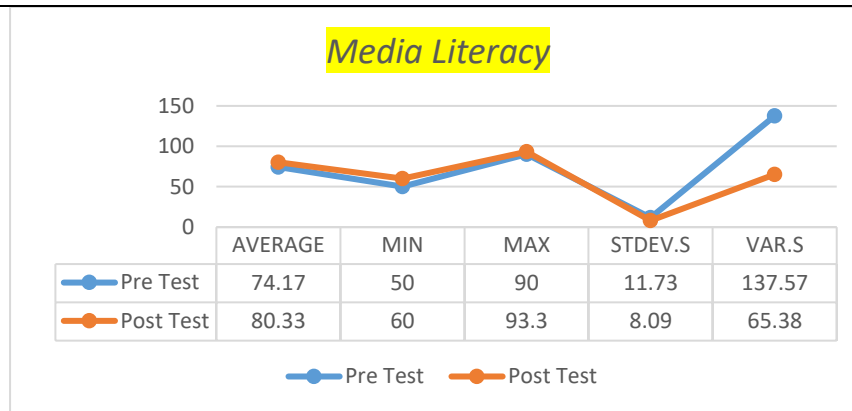


**Figure 3. Graphics on Improving Student Information Literacy**

The practical results of student media literacy analysis to e-book products can be seen in table 17 and Figure 4:

**Table 17.** Results of Student Media Literacy Analysis

Variable	Respondents	Pre Test	Post Test
AVERAGE	20	74.17	80.33
MIN	20	50	60
MAX	20	90	93.3
STDEV.S	20	11.73	80.9
VAR.S	20	137.57	65.38

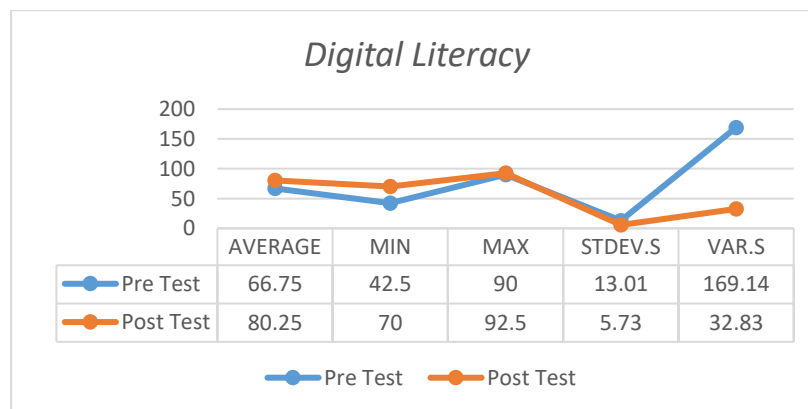


**Figure 4.** Graphics on Improving Student Media Literacy

The practical results of student digital literacy analysis to e-book products can be seen in table 18 and Figure 5:

**Table 18.** Results of Student Digital Literacy Analysis

Variable	Respondents	Pre Test	Post Test
AVERAGE	20	66,75	80,25
MIN	20	42,5	70
MAX	20	90	92,5
STDEV.S	20	13,01	5,73
VAR.S	20	169,14	32,83

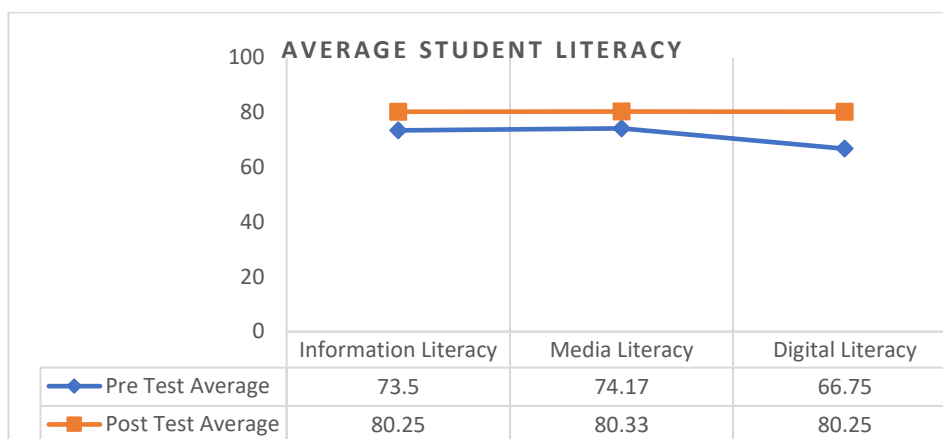


**Figure 5.** Graphics on Improving Student Digital Literacy

Thus the understanding of literacy levels from students increased after using e-book teaching materials in management psychology courses. This can be seen in the table 19.

**Table 19.** *Conclusions of Student Literacy Analysis*

Literacy	Respondents	Pre Test Average	Post Test Average
Information Literacy	20	73,5	80,25
Media Literacy	20	74,17	80,33
Digital Literacy	20	66,75	80,25
Average		71,47	80,28



**Figure 6.** *Graphics of Improvement in Average Student Literacy*

#### 4. Disseminate Stage

This stage is the stage of using E-book Products in Management Psychology Courses in a wider scope. Dissemination can be done in other class sessions, other universities, or other lecturers. There is no dearth of studies published in national and international journals, but these proceedings are outside the scope of the current research.

#### Discussion

Literacy is one of the scientific activities that need to be optimized at the university level. The literacy skills are needed to build critical and creative skills in students. It is purposed to encounter various life phenomena and to improve students' understanding about learning materials. In learning process, E-books can help students to improve their literacy skills. In E-book, the students can read material without being bound by time and place. Such students need not rely on the lecturer as a source of learning (Hardiyanto, 2020). The results of the analysis data showed that the level of understanding of students' literacy increased after using e-books in the learning process, The Literacy Information's average increased from 73.5 to 80.25, an average of Media Literacy increased from 74.17 to 80.33, the Digital Literacy's average increased from 66.75 to 80.25. On other hand, the results of the analysis data of E-book development obtained a validated rate e.g., Material Aspects was 95%, Media Aspects was 82.5%, Language Aspects was 95.25%, Average Product Validity was 90.92%, and categories was very valid.

The development of E-books is carried out in addition to succeeding in improving student literacy skills. E-books make students accustomed to learning independently and fostering critical and creative thinking skills. Mentari et al. (2018) implemented e-book technique on 30 students and it showed 19 students were very creative (63%), 7 students were creative (23.3%), and 3 students were quite creative (13.3%). In line with the results of this research (Wahyuni & Rahayu, 2021), showed that the e-book was declared very feasible by obtaining an average percentage validity score of 94.08%. E-books also showed a practical value by obtaining an average percentage of positive answers from the responses of teachers and learners respectively of 98.37% and 98.68%, and the average

readability was at level 12. It can thus be concluded that the e-book based on management courses to train creative thinking skills is declared valid and practical, theoretical and empirical for use in the learning process.

There are many advantages of using E-books, such as students can learn anywhere and anytime with the availability of an e-book (Wilyanti et al., 2021). The E-book is equipped with videos, images, animations, and music that can be arranged by the user. The learning process becomes more interesting, the amount of teaching time is reduced, the quality and attitude of learning students can be improved (Yusmar et al.). In this study, it was found that the use of E-books was facilitated by lecturers. Its appearance and material made students motivated to learn so that the material can be conveyed. Learning using e-books can be done on campus, at home and can be repeated. It was expected to be useful for students.

### Conclusions and Implications

This study probed the phenomena about the literacy ability among students of The Education Administration Study Program of the Faculty of Education, Universitas Negeri Padang. The literacy ability of students had decreased during the COVID 19 pandemic. They were more preoccupied with social media than spending time with reading and writing (literacy). The decreased literacy ability of students was seen during the learning process. There were many students who did not understand the topic of the learning, and they used the internet rather than employing critical thinking in analyzing a case and problem. This had a great impact on students' cognitive abilities due to low literacy ability

This research took the premise that E-books improve the literacy abilities of students. E-books can help students learn independently, anywhere, and anytime. The students can become creative, the critical thinking skills of students also increase, and the learning process becomes fun for students because there exists no coercion. Improving student information, media, and digital literacy further make students more confident in expressing their opinions.

In this research, E-book development process was explained by using 4D development models (Define, Design, Develop, and Disseminate) where each stage of this model had a clear and easy purpose to use in development research. It discussed the products in development used by students and lecturers in courses. Based on the results of research conducted and supported by the results of previous research, it can be said that the development of E-books for students needs to be done because its advantage lies not only in improving the literacy ability, but it also enables students learn independently, effectively and in an interesting way.

### Acknowledgements

The authors would like to thank Lembaga Penelitian dan Pengabdian Masyarakat Universitas Negeri Padang for funding this work with a contract number: 987/UN35.13/LT/2021.

### References

- Agustina, R., Ardiana, M., & Pertiwi, D. A. (2021). Student Literacy Level in Accounting Fields and Types of Accountant Profession. *Jurnal Economic Resource*, 4(1), 167-176.
- Al-Sharah, N., Awwad, S., Abd Hamid, J., Shukri, S. M., & Ariffin, I. (2021). EFL teachers' perceptions towards English language teaching during the pandemic: Jordanian perceptive. *Eurasian Journal of Applied Linguistics*, 7(2), 171-185. <https://ejal.info/menuscript/index.php/ejal/article/view/115/17>
- Aljazzazen, S., & Schmuck, R. (2021). The Impact of Knowledge Management Practice on Lean Six Sigma Implementation: The Moderating Role of Human Capital in Health Service Organisations. *International Journal of Operations and Quantitative Management*, 27(3), 267-285. <https://doi.org/10.46970/2021.27.3.5>
- Alkhalidi, A. A. (2021). ESL Materials Selection: Key Principles and Suggestions. *Educational Sciences: Theory & Practice*, 21(3), 12-26. <https://jestp.com/index.php/estp/article/view/1459/801>
- Alnabulsi, Z. H., & Salameh, R. S. (2021). Financial Inclusion Strategy And Its Impact On Economic Development. *International Journal of Economics and Finance Studies*, 13(2), 226-252. <https://sobiad.info/index.php/ijefs/article/view/833/90>
- Cencelj, Z., Aberšek, M. K., Abersek, B., & Flogie, A. (2019). Role and Meaning of Functional Science,

- Technological and Engineering Literacy in Problem-Based Learning. *Journal of Baltic Science Education*, 18(1), 132-146. <https://doi.org/10.33225/jbse/19.18.132>
- Cipta., R. (2019). The Organisation for Economic Co-operation and Development. Active with Indonesia (p. 68).
- Çoklar, A. N., Yaman, N. D., & Yurdakul, I. K. (2017). Information literacy and digital nativity as determinants of online information search strategies. *Computers in human behavior*, 70, 1-9. <https://doi.org/10.1016/j.chb.2016.12.050>
- Danielsen, T., & Valaker, S. (2021). Small-State Perspectives on Learning, Improvement and Institutionalization : A Case Study. *Res Militaris*, 11(1). <https://resmilitaris.net/index.php/2021/01/01/id1032516/>
- Deliveli, K. (2021). A Case Study: How Did We Learn Literacy Through Word-Accompanied Sentence Method? *Eurasian Journal of Educational Research (EJER)*(94), 49-78. <https://ejer.com.tr/wp-content/uploads/2021/08/ejer.2021.94.3.pdf>
- Firdaus, M. Z., & Sukiman, S. (2020). Cultivating a Student Reading Culture Through the Ten Minutes Literacy Program Before Lectures. *Educatio*, 15(2), 104-114. <https://doi.org/10.29408/edc.v15i2.2804>
- Hadaya, A., Asrowi, A., & Sunardi, S. (2018). Perception of junior high school students about the use of e-books as learning sources. *Journal of Educational Science and Technology (EST)*, 4(1), 55-61. <https://doi.org/10.26858/est.v4i1.5219>
- Hardiyanto, A. (2020). Developing E-Book for Pre-Intermediate Grammar in EFL Classroom. *PREMISE: Journal of English Education and Applied Linguistic*, 9(2), 129-142. <https://doi.org/10.24127/pj.v9i2.3058>
- Hidayati, A. S. A., Efendi, R., & Saputra, A. (2020). The quality of digital literation early childhood education teachers based on Unesco standards. *Int. J. Sci. Technol. Res*, 9(3), 3514-3517.
- Jannah, N., Fadiawati, N., & Tania, L. (2017). Development of Interactive E-books Based on Daily Life Phenomena on Mixed Separation. *Jurnal pendidikan dan pembelajaran kimia*, 6(1), 186-198.
- Kim, K. T. (2019). The structural relationship among digital literacy, learning strategies, and core competencies among south korean college students. *Educational sciences: theory and practice*, 19(2), 3-21.
- Lin, K. Y., & Lu, S. C. (2018). Effects of project-based activities in developing high school students' energy literacy. *Journal of Baltic Science Education*, 17(5), 867. <https://doi.org/10.33225/jbse/18.17.867>
- Mawarni, S., & Muhtadi, A. (2017). Development of interactive digital books for interactive learning multimedia development courses for education technology students. *Jurnal Inovasi Teknologi Pendidikan*, 4(1), 84-96. <https://doi.org/10.21831/jitp.v4i1.10114>
- Mentari, D., Sumpono, S., & Ruyani, A. (2018). Development of e-book learning media based on the results of 2-d electrophoresis research to measure students' creative thinking skills. *PENDIPA Journal of Science Education*, 2(2), 131-134. <https://doi.org/10.33369/pendipa.2.2.131-134>
- Muswita, U., A. B., Yelianti, U., & Wicaksana, E. J. (2018). Development of Mobile Learning-Based E-Book on Plant Structure Course. *Biological Education*, 11, 93-104.
- Petrus, I., Indrawati, S., Ernalida, E., & Eryansyah, E. (2020). Pre-Service EFL Teachers' Digital Literacy and Factors Affecting Digital Literacy Development. | IRJE | Indonesian Research Journal in Education|, 4(2), 402-412.
- Phuapan, P., Viriyavejakul, C., & Pimdee, P. (2016). An analysis of digital literacy skills among Thai University seniors. *International Journal of Emerging Technologies in Learning*, 11(3). <https://doi.org/10.3991/ijet.v11i03.5301>
- Pujiatna, T., Rosmaya, E., & Wahyuningsih, N. (2020). Development of Local Wisdom-Oriented Listening Teaching Materials to Improve Students' Literacy Skills in Listening Courses. *Deiksis: Jurnal Pendidikan Bahasa dan Sastra Indonesia*, 7(1), 91-97. <https://doi.org/10.33603/deiksis.v7i1.2804>
- Raihan, S., Haryono, H., & Ahmadi, F. (2018). Development of Scientific Learning E-Book Using 3D Pageflip Professional Program. *Innovative Journal of Curriculum and Educational Technology*, 7(1), 7-14.
- Rais, M., Fadillah, R., & Rivai, A. A. (2019). The effectiveness of blended learning in improving media literacy on different self-regulated learning. *Journal of Educational Science and Technology (EST)*, 5(3), 277-285. <https://doi.org/10.26858/est.v5i3.10873>
- Sagarik, D. (2021). Rethinking And Reshaping Thailand's National E-Payment In The Post-Covid Era. *International Journal of eBusiness and eGovernment Studies*, 13(1), 240-262. <https://sobriad.info/index.php/ijebe/article/view/653/57>
- Sahib, A. S., & Farag, J. H. (2021). Relationship between Environmental Tax and Production Cost. *Cuadernos de*

- Economía*, 44(126), 57-66. <https://cude.es/submit-a-manuscript/index.php/CUDE/article/view/207/191>
- Sari, E. S., & Pujiono, S. (2017). Literacy Culture Among FBS UNY Students. *Litera*, 16(1).
- Smaldino, S. E., Lowther, D. L., Russell, J. D., & Mims, C. (2008). Instructional technology and media for learning, 12 edition, 1-22.
- Spector, J. M. (2015). *Foundations of educational technology: Integrative approaches and interdisciplinary perspectives*. Routledge.
- Thiagarajan, S. (1974). Instructional development for training teachers of exceptional children: A sourcebook.
- Umut Zan, B., Çolaklar, H., Altay, A., & Taşkın, N. (2020). A Study on Digital Literacy Skills of Faculty of Letters Students: Use of University Library. *International Journal of Emerging Technologies in Learning*, 16(1), 152–171. <https://doi.org/10.3991/ijet.v16i01.16567>
- Vassiliou, M., & Rowley, J. (2008). Progressing the definition of “e-book”. *Library Hi Tech*, 26(3), 355–368. <https://doi.org/10.1108/07378830810903292>
- Wahyuni, L., & Rahayu, Y. S. (2021). Development of Project Based Learning (PjBL)-Based E-books to Practice Creative Thinking Skills on Plant Growth and Development Materials for class XII SMA. *Berkala Ilmiah Pendidikan Biologi (BioEdu)*, 10(2), 314-325. <https://doi.org/10.26740/bioedu.v10n2.p314-325>
- Waśko, R. (2021). Efekt trzeciej osoby jako jeden z przejawów wpływu mediów na odbiorcę. Geneza i perspektywy badawcze. *socialspacejournal.eu*, 21(1), 159-188. <https://socialspacejournal.eu/wp-content/uploads/2021/12/Social-Space-Journal-1202121.pdf>
- Wilyanti, L. S., Larlen, L., & Suryani, I. (2021). Development of Drama Course E-Books as Independent Learning Media in the Pandemic Period. *Jurnal Ilmiah Universitas Batanghari Jambi*, 21(1), 156-162. <https://doi.org/10.33087/jjubj.v21i1.1136>
- Yanuarti, E., & Sari, D. P. (2019). The Role of Lecturers in Utilizing Social Media as a Student Learning Literacy Tool. *JOEAI: Journal of Education and Instruction*, 2(2), 127-138. <https://doi.org/10.31539/joeai.v2i2.892>
- Yaşar, M. D. (2020). Chemistry Teachers ’ Assessment Literacy in. ., *Journal of Baltic Science Education*, 19(1), 76-90. <https://doi.org/10.33225/jbse/20.19.76>
- Yusmar, F., Subchan, W., & Prihatin, J. The Effectivity of Interactive E-book Based on Science Process Skill using Android Application for Excretion System Material ON Students Science Process Skills, 5(7), 5–8. <https://doi.org/10.22161/ijaers.5.7.2>

<b>Jasrial</b>	Scientific degree, position, affiliation, postal address. E-mail: <a href="mailto:jasrial@fip.unp.ac.id">jasrial@fip.unp.ac.id</a> Website: <a href="https://www.unp.ac.id/">https://www.unp.ac.id/</a> ORCID: <a href="https://orcid.org/0000-0002-6892-263X">0000-0002-6892-263X</a>
<b>Sulastri</b>	Scientific degree, position, affiliation, postal address. E-mail: <a href="mailto:sulastri@fip.unp.ac.id">sulastri@fip.unp.ac.id</a> Website: <a href="https://www.unp.ac.id/">https://www.unp.ac.id/</a> ORCID:
<b>Andra Saputra</b>	Scientific degree, position, affiliation, postal address. E-mail: <a href="mailto:andrasaputra552@gmail.com">andrasaputra552@gmail.com</a> Website: <a href="https://www.unp.ac.id/">https://www.unp.ac.id/</a> ORCID:
<b>Muhammad Kristiawan</b>	Scientific Degree, Position, Affiliation, Postal Address Email: <a href="mailto:muhammadkristiawan@unib.ac.id">muhammadkristiawan@unib.ac.id</a> Website: <a href="https://www.unib.ac.id/">https://www.unib.ac.id/</a> ORCID: <a href="https://orcid.org/0000-0002-1077-4013">https://orcid.org/0000-0002-1077-4013</a>