

Management of Information and Communication Technology (ICT) Learning Packages

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Abstract

The purpose of this development is to produce a package of learning information and communication technology subjects consisting of 1) teaching materials, 2) teacher's guide, and 3) student guides. The development model used is the Dick, Carey, & Carey model, which is modified based on development requirements. This model leads to efforts to solve learning problems and be programmed through systematic procedures or steps. The results showed that this learning package was able to improve student learning outcomes compared to previous conditions. It can be seen from the results of testing the effectiveness of learning using the t-test of the results of the pre-test and post-test given to students showing the value of $t_{count} = 64,510 > t_{table} = 2,064$ so that it can be said that this information and communication technology learning package is valid.

Keywords

Development, learning, dick Carey and Carey, Information, and Communication Technology.

1. Introduction

Learning is an effort to learn students (Meilantifa et al., 2019). Learning activities are an effort to develop student potential through a series of activities carried out continuously and continuously to achieve goals (Ardiyani et al., 2018; Chi, 2009; Nguyen, 2017). Many factors can affect learning achievement, including the appearance of teaching materials (Hartini et al., 2018; Syafruddin et al., 2020; de Sena et al., 2020; Oliveira et al., 2019). The appearance of an exciting book or module can generate interest in learning (Prawiradilaga, 2015). Furthermore, Prawadilaga stated that teaching material in learning design is the only tangible form of an essential component of learning design (Muhid et al., 2020). To provide adequate teaching materials as an effort to optimize the learning process of ICT subjects, one way that can be taken is to improve the learning design by preparing ICT learning packages that are attractive, effective, and efficient (Divayana et al., 2021; Mantoro et al., 2017; Mooij, 2007; Mooij, 2004; Rahmi et al., 2020; Putra et al., 2020). The selection of the Dick, Carey, and Carey (Dick et al., 2015) models in the preparation of ICT teaching materials for class VIII semester II has based on the thought that this model is

very suitable and following the characteristics of ICT subjects, namely by using system theory created and used to design learning packages in the realm psychomotor skills, intellectual skills, and verbal information. The purpose of this development is to produce learning packages in the form of teaching materials, teacher guides, and student guides, which are expected to optimize the learning process and facilitate student learning in ICT subjects.

2. Methodology

2.1 Development style

The development model used is the Dick, Carey & Carey model that has been modified based on development requirements. This model has ten procedural steps, only for this development to be adapted to nine steps (Figure 1).

2.2 Development Procedure

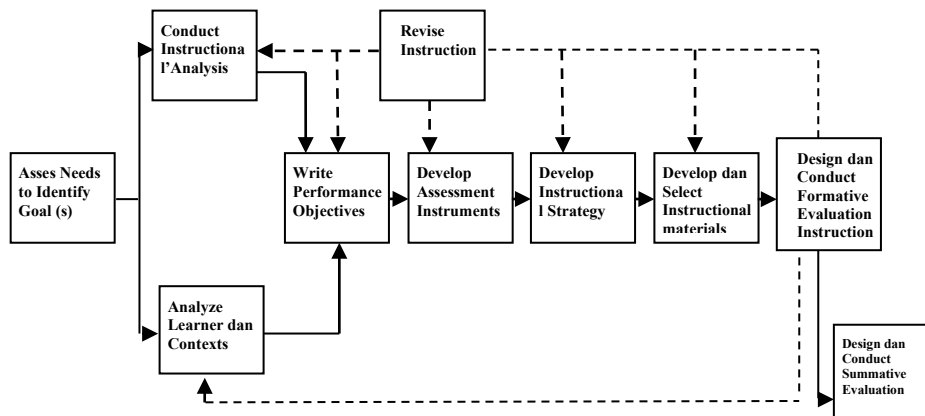


Figure 1. Dick, Carey and Carey Development Model

1. Identify the need to determine general learning objectives
2. Conduct Learning Analysis
3. Identify student characteristics
4. Formulate specific learning goals
5. Develop assessment instruments
6. Develop learning strategies
7. Develop and choose learning materials
8. Design and carry out formative evaluations
9. Revising learning products

2.3 Product Trial

2.3.1 Trial Design

The steps of testing the product of this development research are:

- a. Review by subject matter experts.
- b. Review by learning design experts.
- c. Review by learning media experts.
- d. Individual Trial.
- e. Small-Group Trial.
- f. Field Test.

2.3.2 Trial Subjects

- a. Preview stage of the experts

The test subjects at this stage were conducted by one ICT content subject, one learning design expert, and one learning media expert.

b. Individual trial phase

The trial subjects were three students of Puspa Bangsa MTs. The three students consisted of one high achiever, one moderate achiever, and one low achiever accompanied by a teacher and researcher.

c. Small-Group Trial Phase

The trial subjects were six MTs Puspa Bangsa students. The six students consisted of two high achievers, two medium achievers, and two low achievers accompanied by teachers and researchers.

d. Field trial phase

The first step is to provide a pre-test to find out the initial abilities of students and end with a post-test to find out the ability of students after they receive material with a planned strategy.

2.4 Data Type

Qualitative data were obtained from a subject matter expert reviews, instructional design experts, instructional media experts, individual trial results, small group trial results, field trial review results, and subject teacher review results through questionnaires and interviews and observation sheets. Quantitative data obtained through tests in the form of preliminary results and post-test from field trials. The results of qualitative data are quantified using the Lickert scale (five scales) for the data analysis process.

2.5 Data Collection Instruments

The instruments used in data collection are documentation, questionnaires, interviews, and tests.

2.6 Technical Analysis of Data

a. Qualitative descriptive

Used to process data from subject matter expert reviews, instructional media experts, instructional design experts, and field trials, in the form of input, responses, criticism and improvement suggestions contained in the questionnaire and the results of the interview.

b. Descriptive statistical analysis

This analysis technique is used to process data obtained through a questionnaire in the form of a percentage of each subject's answers with the formula:

$$p = \frac{\sum xi}{\sum x} \times 100 \%$$

(Walpole et al., 2013)

Information:

p = percentage of assessment
= number of answers from validate
= Highest number of answers

Next, to calculate the percentage of the whole subject/component used the following formula:

$$P = \frac{\sum p}{\sum n} \times 100 \%$$

(Walpole, 2013)

Information:

P = percentage of overall subjects / components
 $\sum p$ = total percentage of all components
 $\sum n$ = many components

The results of the pre-test and post-test field tests were calculated by t-test with a significance level of 0.05. T-test calculations were performed with the help of statistical software, Microsoft Office Excel 2007

The t-test formula is:

$$t = \frac{Md}{\sqrt{\frac{\sum x^2 d}{N(N-1)}}}$$

(Walpole, 1992)

Information:

- t : t-test
- Md : the mean of the difference between pre-test and post-test (post-test - pre-test)
- $\sum x^2 d$: the sum of the squares of the deviations
- N : subject on the sample

III. Result and Discussion

Data analysis was obtained from the results of the response/assessment instruments of subject matter experts, media experts, design experts, individual trial results, small group trials, and field trials.

3. Expert Subject Test

3.1 Data Presentation and Data Analysis

a. Teaching materials (Table 1)

Table 1. Data of Expert Assessment Results on Content on Teaching Materials

Number of question items	Score	Frequency	Percentage
19	5	7	36,84%
	4	12	50,53%
Total			87,37%

Input expert suggestions and comments on the subject matter are as follows:

- 1) Teaching material is competent enough
- 2) There was a typing error; please be more careful

The percentage calculation results obtained at 87.37%. After being converted, it shows that the teaching material is in excellent qualification, so in general, it does not need to be revised (Table 2).

b. Teacher's Guide

Table 2. Data on Expert Assessment Results in Subjects to Teacher's Guide

Number of question items	Score	Frequency	Percentage
9	5	2	22,22%
	4	7	62,22%
Total			84,44%

Input, suggestions, and comments from content experts to the teacher's guide are as follows:

- 1) The teacher's guide is good enough.
- 2) Analysis of learning using operational words

The percentage calculation results obtained by 84.44%. After being converted, it shows that the teacher's guide is in suitable qualification, so in general, it does not need to be revised (Table 3).

c. Student Guide

Table 3. Data on the results of expert content assessments on student guides

Number of question items	Score	Frequency	Percentage
9	5	1	11,11%
	4	8	71,11%

Total			82,22%
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Inputs, suggestions, and comments from subject matter experts to the student guide as follows:

- 1) The student guide is good enough.
- 2) Analysis of learning using operational words

The percentage calculation results obtained by 82.22%. After being converted shows that the student guide is in suitable qualification, so in general, it does not need to be revised.

3.2 Product Development Revision

a. Teaching materials (Table 4)

Table 4. Revision of teaching materials upon expert input of subject matter

No	Revised item	Revision
1	The cover color is too dark	revised
2	Author's font name is too large	revised
3	Page 6 The word "program" is replaced by a "program."	Revised

b. Teacher's Guide (Table 5)

Table 5. .Revised teacher guide to expert input of subject matter

No	Revised item	Feedback	Revision
1	Learning Analysis	need to be sharpened (more focused).	Revised using more operational words

c. Student Guide (Table 6)

Table 6. Revised student guide to expert content input

No	Revised item	Feedback	Revision
1	Learning Analysis	need to be sharpened (more focused).	Revised using more operational words

4. Learning Media Expert Test

4.1. Data Presentation and Data Analysis

a. Teaching materials (Table7)

Table 7. The results of the evaluation of learning media experts on teaching materials

Number of question items	Score	Frequency	Percentage
14	5	2	14,28%
	4	12	68,57%
Total			82,85%

Inputs, suggestions, and comments from instructional media experts regarding teaching materials as follows:

- 1) The quality of the printing equipment (printer) must be improved because there are many print problems.

The percentage calculation results obtained by 98.56%. After being converted, it shows that the teaching material is in excellent qualification, so in general, it does not need to be revised .

b. Teacher's Guide (Table 8)

Table 8. The results of the learning media expert assessment of the teacher's guide

Number of question items	Score	Frequency	Percentage
8	5	1	12,5%
	4	7	70%
Total			82,5%

Learning media expert input, suggestions, and comments regarding the teacher's guide are as follows:

1) Need a better printing device (printer) because in printings at this time, there is still noise (print interference).

The percentage calculation results obtained by 82.5%. After being converted, it shows that the teacher's guide is in suitable qualification, so in general, it does not need to be revised.

c. Student Guide ((Table 9).

Table 9. Results of instructional media expert assessment of student guides

Number of question items	Score	Frequency	Percentage
9	5	1	11,11%
	4	8	71,11%
Total			82,22%

Learning media expert input, suggestions, and comments regarding student guides are as follows:

1) Pay attention to the edges of the paper.

The percentage calculation results obtained by 82.22%. After being converted shows that the student guide is in suitable qualification, so in general, it does not need to be revised.

4.2 Product Development Revision

a. Teaching materials (Table 10)

Table 10. Revision of instructional materials upon instructional media expert input

No	Revised item	Feedback	Revision
1	Quality of printing equipment	The quality of printing equipment needs to be improved	Already printed with other printing devices (printers).

b. Teacher's Guide(Table 11)

Table 11. Revised teacher guidelines for instructional media expert input

No	Revised item	Feedback	Revision
1	Printing equipment	Noise (print noise)	Already printed with another printer

c. Student Guide(Table 12)

Table 12. Revised student guide for expert learning media input

No	Revised Item	Feedback	Revision
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1	The size of the paper border	Layouts need to make room on the edge of the page.	The revision has been made by changing the page boundary settings
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5. Learning Design Expert Test

5.1 Data Presentation and Data Analysis

a. Teaching materials (Table 13)

Table 13. Results of the assessment of learning design experts on teaching materials

Number of question items	Score	Frequency	Percentage
16	4	2	10%
	3	14	52,5%
Total			62,5%

Learning design expert input, suggestions, and comments are as follows (Table 14):

- 1) The color of the cover design is not bright enough
- 2) Lots of typos

b. Teacher's Guide

Table 14. The results of the learning design expert's assessment of the teacher's guide

Number of question items	Score	Frequency	Percentage
9	5	1	11,11%
	4	1	8,89%
	3	7	46,67%
Total			66,67%

Learning design expert input, suggestions, and comments are as follows:

- 1) The quality of the binding needs to be improved.
- 2) Posts too to the top edge.

The percentage calculation results obtained by 66.67%. After being converted, it shows that the teacher's guide is in poor qualification, so it must be revised.

c. Student Guide (Table 15)

Table 15. The results of the learning design expert's assessment of the student's guide

Number of question items	Score	Frequency	Percentage
9	4	1	8,89%
	3	8	53,33%
Total			62,22%

5.2 Product Development Revision

a. Teaching materials (Table 16)

Table 16. Revised teaching materials upon input of learning design experts

No	Revised Item	Feedback	Revision
1	Cover	The color of the cover design is not bright enough	It has been revised by adding cover color brightness

b. Teacher's Guide (Table 17)

Table 17. Revised teacher guide to expert design learning input

No	Revised Item	Feedback	Revision
1	bindery	The quality of the binding needs to be improved	revised
2	Display	Display settings need to be improved	Revised

c. Student Guide (Table 18)

Table 18. Revised student guide for instructional design expert input

No	Revised Item	Feedback	Revision
1	Bindery	The quality of the binding needs to be improved	Revised

6. Individual Trial

6.1 Data Presentation and Analysis

a. Teaching materials (Table 19)

Table 19. Individual test results on teaching materials

No	Rated aspect	Score	f	P (%)	ammount (%)
1.	The size of teaching materials can attract your attention.	5	2	66,67	93,34
		4	1	26,67	
2.	The cover design of teaching materials can catch your attention.	5	3	100	100
3.	Directions on teaching materials can help you understand how to use teaching materials.	5	1	33,33	86,66
		4	2	53,33	
4.	The content framework in teaching materials can help you understand the overall contents of the teaching materials.	4	3	80	80
5.	The inclusion of the learning objectives in each chapter helps you know the skills you will master at the end of the material.	5	2	66,67	86,67
		3	1	20	
6.	You can understand the description of the contents of the material in this teaching material	5	2	66,67	86,67
		3	1	20	
7.	You are interested in learning the contents of teaching materials.	5	2	66,67	93,34
		4	1	26,67	
8.	The selection of illustrations/examples/pictures in teaching materials can help you understand the material.	5	2	66,67	93,34
		4	1	26,67	
9.	Writing in teaching materials helps you understand the material.	5	2	66,67	93,34
		4	1	26,67	
10.	The choice of colors in teaching materials can attract your attention.	5	2	66,67	93,34
		4	1	26,67	
11.	Summary of teaching materials makes it easy for you to understand the material in general.	4	2	53,33	73,33
		3	1	20	
12.	The practice questions in this teaching material are easy to understand.	5	2	66,67	93,34
		4	1	26,67	
13.	The practice questions in teaching materials help increase your understanding of the material.	5	1	33,33	86,66
		4	2	53,33	
14.	The language used in teaching materials is easy to	4	3	80	80

	understand.				
15.	These teaching materials generally make it easier for you to understand the material in the subjects of Information and Communication Technology	5	2	66,67	93,34
		4	1	26,67	
16.	Teaching materials can motivate you to take part in learning.	5	1	33,33	86,66
		4	2	53,33	
	Average percentage				88,75

The mean percentage obtained was 88.75%. After being converted, it is known that teaching materials are in excellent qualifications. Based on the existing scores and considering input, comments, and suggestions, both in writing and orally, to revise teaching materials, especially on the summary components and cover color, can be judged appropriate for use in small group trials.

b. Student Guide (Table 20)

Table 20. Data on the results of individual trials against student guides

No	Rated aspect	score	F	P (%)	ammount (%)
1.	The size of the guide can catch your attention.	4	2	53,33	73,33
		3	1	20	
2.	The cover design of the student guide can catch your attention.	5	1	33,33	86,66
		4	2	53,33	
3.	Student guides make it easy for you to learn teaching material.	4	2	53,33	73,33
		3	1	20	
4.	The inclusion of the subject's identity helps you know the material to be learned.	5	1	33,33	86,66
		4	2	53,33	
5.	Suitability of time allocation arrangements with the material.	5	3	100	100
6.	The inclusion of learning strategies helps you know the teaching and learning process.	4	1	26,66	66,66
		3	2	40	
7.	Inclusion of learning objectives can help you know the skills expected after learning the contents of this teaching material	5	3	100	100
8.	The questions in your student guide are easy for you to understand.	4	2	53,33	73,33
		3	1	20	
9.	Clarity of exposure in the student guide	5	1	33,33	86,66
		4	2	53,33	
10.	Color selection in the student guide can catch your attention.	4	2	53,33	73,33
		3	1	20	
11.	The language used in your student guide is easy to understand.	4	3	100	100
	Percentage average				83,63

The mean percentage obtained was 83.63%. After conversion, it was known that the student's guide was in good qualifications.

6.2 Product Revision (Table 21)

Table 21. Revision of student guides based on individual trials

No	Feedback, suggestions, and comments	Revision
1.	A summary is too short	Add a sentence to the summary

2.	The color design of the cover is not bright enough	Increase brightness on the cover
	Revision of student guides based on individual trials	
	Feedback, suggestions, and comments	Revision
	The color design of the cover is not bright enough	Increase brightness on the cover

7. Small-Group Trials

7.1 Data Presentation and Analysis

a. Teaching materials (Table 22)

Table 22. Table Data from Small-Group Trial Results on Materials

No	Rated aspect	Score	F	P (%)	Amount(%)
1.	The size of teaching materials can attract your attention.	5	4	66,67	93,34
		4	2	26,67	
2.	The cover design of teaching materials can catch your attention.	5	3	50	90
		4	3	40	
3.	Directions on teaching materials can help you understand how to use teaching materials.	5	4	66,67	93,34
		4	2	26,67	
4.	The content framework in teaching materials can help you understand the overall contents of the teaching materials.	5	4	66,67	93,34
		4	2	26,67	
5.	The inclusion of the learning objectives in each chapter helps you know the skills you will master at the end of the material.	5	6	100	100
6.	You can understand the description of the contents of the material in this teaching material	5	5	83,33	93,33
		3	1	10	
7.	You are interested in learning the contents of teaching materials.	5	4	66,67	93,34
		4	2	26,67	
8.	The selection of illustrations/examples/pictures in teaching materials can help you understand the material.	5	5	83,33	96,66
		4	1	13,33	
9.	Writing in teaching materials helps you understand the material.	5	4	66,67	93,34
		4	2	26,67	
10.	The choice of colors in teaching materials can attract your attention.	5	3	50	90
		4	3	40	
11.	Summary of teaching materials makes it easy for you to understand the material in general.	4	4	53,33	73,33
		3	2	20	
12.	The practice questions in this teaching material are easy to understand.	5	5	83,33	96,66
		4	1	13,33	
13.	The practice questions in teaching materials help increase your understanding of the material.	5	4	66,67	93,34
		4	2	26,67	
14.	The language used in teaching materials is easy to understand.	5	4	66,67	93,34
		4	2	26,67	
15.	These teaching materials generally make it easier for you to understand the material in the subjects of Information and Communication Technology	5	5	83,33	96,66
		4	1	13,33	
16.	Teaching materials can motivate you to take part in learning.	5	4	66,67	93,34
		4	2	26,67	

	Average percentage				92,71
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The average score obtained for the components of teaching materials is 5 (very good), 4 (good), and 3 (good enough). The mean percentage obtained was 92.71%. After being converted, it is known that teaching materials in qualifications are excellent.

c. Student Guide (Table 23)

Table 23. Small-Group Trial Result Data on Student Guides

No	Rated aspect	Score	F	P (%)	Amount (%)
1.	The size of the guide can catch your attention.	4	4	53,33	73,33
		3	2	20	
2.	The cover design of the student guide can catch your attention.	5	3	50	90
		4	3	40	
3.	Student guides make it easy for you to learn teaching material.	4	5	66,67	76,67
		3	1	10	
4.	The inclusion of the subject's identity helps you know the material to be learned.	5	5	83,33	96,66
		4	1	13,33	
5.	Suitability of time allocation arrangements with the material.	5	6	100	100
6.	The inclusion of learning strategies helps you know the teaching and learning process.	4	5	66,67	76,67
		3	1	10	
7.	Inclusion of learning objectives can help you know the skills expected after learning the contents of this teaching material	5	6	100	100
8.	The questions in your student guide are easy for you to understand.	4	2	26,67	66,67
		3	4	40	
9.	Clarity of exposure in the student guide	5	2	33,33	73,33
		4	4	40	
10.	Color selection in the student guide can catch your attention.	4	2	26,67	66,67
		3	4	40	
11.	The language used in your student guide is easy to understand.	4	6	100	100
	Percentage average				83,64

The mean percentage obtained was 83.64%. After being converted into a conversion table, it is known that the student guide is in good qualifications. Based on the existing scores and considering input, comments, and suggestions, both in writing and orally, to revise student guides, it can be judged appropriate for use in field trials .

7.2 Product Revision

Results are presented in table 24 as below.

Table 24. Revision of teaching materials based on small group trials.

No	Feedback, suggestions, and comments	Revision
1.	Learning materials are easy to understand	There are no revisions
2.	The cover should be brighter	Color brightness added on the cover
3.	The picture is interesting	There are no revisions

8. Field Trial

8.1 Data Presentation and Analysis

a. Student Guide (Table 25)

Table 25. Data on the results of field trials on student guides

No	Rated Aspect	Score	F	P (%)	Amount (%)
1.	The size of the guide can catch your attention.	5	9	36	82,4
		4	10	32	
		3	6	14,4	
2.	The cover design of the student guide can catch your attention.	5	9	36	82,4
		4	10	32	
		3	6	14,4	
3.	Student guides make it easy for you to learn teaching material.	5	13	52	86,4
		4	7	22,4	
		3	5	12	
4.	The inclusion of the subject's identity helps you know the material to be learned.	5	16	64	89,6
		4	5	16	
		3	4	9,6	
5.	Suitability of time allocation arrangements with the material.	5	16	64	89,6
		4	5	16	
		3	4	9,6	
6.	The inclusion of learning strategies helps you know the teaching and learning process.	5	14	56	88,8
		4	8	25,6	
		3	3	7,2	
7.	Inclusion of learning objectives can help you know the skills expected after learning the contents of this teaching material	5	15	60	87,2
		4	4	12,8	
		3	6	14,4	
8.	The questions in your student guide are easy for you to understand.	5	10	40	83,2
		4	9	28,8	
		3	6	14,4	
9.	Clarity of exposure in the student guide	5	11	44	88,8
		4	7	22,4	
		3	7	22,4	
10.	Color selection in the student guide can catch your attention.	5	15	60	87,2
		4	4	12,8	
		3	6	14,4	
11.	The language used in your student guide is easy to understand.	5	11	44	85,6
		4	10	32	
		3	4	9,6	
	Percentage average				86,47

Scores obtained on 11 components of teaching materials from 25 (twenty-five) students are a score of 5 (very good), a score of 4 (good), a score of 3 (good enough). The mean percentage is obtained at 86.47%. After conversion, it is known that the student guide is in excellent qualifications (Table 24, Table 25).

b. Teaching materials (Table 26)

Table 26. Questionnaire results data on student responses to teaching materials in field trials

No	Rated Aspects	Score	F	P (%)	Amount (%)
1.	The size of teaching materials can attract your attention.	5	11	44	85,6
		4	10	32	
		3	4	9,6	
2.	The cover design of teaching materials can catch your attention.	5	13	52	86,4
		4	7	22,4	
		3	5	12	
3.	Directions on teaching materials can help you understand how to use teaching materials.	5	9	36	82,4
		4	10	32	
		3	6	14,4	
4.	The content framework in teaching materials can help you understand the overall contents of the teaching materials.	5	16	64	89,6
		4	5	16	
		3	4	9,6	
5.	The inclusion of the learning objectives in each chapter helps you know the skills you will master at the end of the material.	5	15	60	87,2
		4	4	12,8	
		3	6	14,4	
6.	You can understand the description of the contents of the material in this teaching material	5	14	56	88,8
		4	8	25,6	
		3	3	7,2	
7.	You are interested in learning the contents of teaching materials.	5	13	52	85,6
		4	6	19,2	
		3	6	14,4	
8.	The selection of illustrations/examples/pictures in teaching materials can help you understand the material.	5	14	56	88,8
		4	8	25,6	
		3	3	7,2	
9.	Writing in teaching materials helps you understand the material.	5	14	56	88,8
		4	8	25,6	
		3	3	7,2	
10.	The choice of colors in teaching materials can attract your attention.	5	13	52	86,4
		4	7	22,4	
		3	5	12	
11.	Summary of teaching materials makes it easy for you to understand the material in general.	5	9	36	82,4
		4	10	32	
		3	6	14,4	
12.	The practice questions in this teaching material are easy to understand.	5	16	64	89,6
		4	5	16	
		3	4	9,6	
13.	The practice questions in teaching materials help increase your understanding of the material.	5	15	60	87,2
		4	4	12,8	
		3	6	14,4	
14.	The language used in teaching materials is easy to understand.	5	14	56	88
		4	7	22,4	
		3	4	9,6	
15.	These teaching materials generally make it easier for you to understand the material in Islamic Religious Education subjects.	5	13	52	87,2
		4	8	25,6	
		3	4	9,6	
16.	Teaching materials can motivate you to take part in learning.	5	11	44	85,6
		4	10	32	
		3	4	9,6	
	Percentage average				86,85

Scores obtained on 16 components of teaching materials from 25 (twenty-five) students are a score of 5 (very good), a score of 4 (good), a score of 3 (good enough). The mean percentage is 86.85%. After conversion, it is known that teaching materials are in very good qualifications (Table 27).

Table 27. Data on the questionnaire results of teacher responses to teaching materials in field trials

Number of question items	Score	Frequenc y	P (%)
16	5	11	68,75
	4	5	25
Total			93,75

Scores obtained on the 16 components of teaching materials are a score of 5 (very good), a score of 4 (good). The mean percentage is 93.75%. After conversion, it is known that teaching materials are in very good qualifications.

8.2 Product Revision

Teaching data are presented in Table 28, 29, 30 and 31 as below.

Table 28. Revision of teaching materials based on the results of field trials by students

No	Feedback, suggestions, and comments	Revision
1.	The textbook is exciting and easy to understand	There are no revisions

Table 29. Revised teacher guide based on the results of field trials

No	Feedback, suggestions, and comments	Revisi
1.	The book is nice and interesting	There are no revisions

Table 30. Data from field trial results on teaching materials

No	Respondents	Values	
		Pre-test	Posttest
1.	AA	70	90
2.	AH	60	75
3.	AWS	80	80
4.	BR	75	90
5.	DMP	80	90
6.	EN	50	70
7.	FN	65	90
8.	HAP	65	90
9.	HL	55	85
10.	ISR	70	85
11.	M	80	90
12.	MAR	60	80
13.	NS	65	85
14.	NAM	65	75
15.	NS	75	85
16.	PR	75	90
17.	SI	80	95
18.	SK	75	85
19.	SI	65	85
20.	SNA	65	80

21.	SB	50	70
22.	SW	70	90
23.	S	70	95
24.	WF	60	80
25.	YS	45	65
Total		1670	2095
Minimum score		45	65
Maximum score		80	95
Average		66,8	83,8

Table 31. T-test results data on information and communication technology learning packages

Average score		t_{hit}	t_{table} ($\alpha=0,05$); $v=24$
Pre-test	Posttest		
66,800	83,800	64,510	2,064

Testing criteria t:

1. If $-t_{table} \leq t_{count} \leq t_{table}$, so H_0 is accepted and H_a is rejected
2. If $-t_{count} < -t_{table}$ or $t_{count} > t_{table}$ so H_0 is rejected and H_a is accepted

with an assumption: H_0 : the difference between pre-test and post-test is zero (no difference)

H_a : the difference between pre-test and post-test is not equal to zero (there is a difference)

Based on the data in the table above (Table 27-31) it is known that the value of $t_{count} = 64,510 > t_{table} = 2,064$ so that H_0 is rejected and H_a is accepted. This shows that there are real differences between the results of the pre-test and post-test so that it can be said that the learning package for information and communication technology in class VIII at MTs Puspa Bangsa Banyuwangi in 2011 is valid.

9. Conclusion

The development of this information and communication technology learning package uses the Dick, Carey, and Carey models in 2001, whose development process only reached the ninth stage. The results of the data analysis concluded that with a significance level of 0.05 in the pre-test and post-test analysis above the value of $t_{count} = 64,510 > t_{table} = 2.064$ so that it can be said that the information and communication technology learning package class VIII at MTs Puspa Bangsa Banyuwangi in 2011 was effective.

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