

FIELD TRIAL ANALYSIS OF PRINTED AGRICULTURAL EXTENSION ADMINISTRATION'S (LUHT4343) LEARNING MATERIALS

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Abstract

Revisions of printed learning materials have been made by Agribusiness Study Program in Universitas Terbuka (UT) especially for those which have been printed for more than five years, including the materials for the Agricultural Extension Administration (LUHT4343) course. Evaluation of learning materials is needed to support the suitability of the materials and competences (cognitive, affective, and psychomotoric) that students need to become effective instructional materials to support their learning activities. The purposes of this study were to describe the readability level of the Agricultural Extension Administration course and to generate analysis based on pre and post test evaluation for Module #2 and Module #5 Agricultural Extension Administration course. The design of the study was a formative evaluation research with the aim for assessing the quality and improving the printed learning material. Data obtained from these formative evaluations were collected and interpreted to solve the difficulties faced by students in studying the printed learning material. The population of study was all students in the Agribusiness study program. Thirty student samples were taken from Serang Regional Office. Data were analyzed using quantitative and qualitative analyses. Conclusions obtained from the field trial analysis concerning the readability level for Module #2 and #5 for Agricultural Extension Administration were that the learning materials were easy to understand, the materials could lead students in self-learning; the exercises given were appropriate and related to the content, the summaries given could be understood, and there were not enough examples and the illustrations were not suitable enough. Based on the pre- and post-test analysis, it can be concluded that after the students studied the materials in Module #2, there was an increase in the ability of students for mastering of the contents of Module #2 and it was significantly different before and after reading the module. On the other hand, for Module #5, there was a decreased ability of students to master the contents of the learning material and it was significantly different before and after reading the modules. Some suggestions and improvements have been proposed by students to improve the quality of the learning material in Modules #2 and #5 for Agricultural Extension Administration. Some recommendations proposed as a result of this study are firstly, re-writing and revising the learning materials in Module #2 and #5 in order to accommodate the proposed improvements and suggestions from students, and secondly, conducting further research to create non-printed course materials to improve the quality and readability of the learning materials.

Keywords:

agricultural extension administration, field trial analysis, revision of printed learning materials

INTRODUCTION

The Agribusiness undergraduate study program is one of the study programs in the Biology Department in the Faculty of Mathematics and Natural Sciences. The Agribusiness Study Program was founded in order to accommodate the need to improve the competence of agriculture extension workers who specialized in the field of agriculture/animal husbandry/fishery extension.

Related to the institution policy, Agribusiness Study Program revises all printed learning materials which are more than five years old. From the existing courses, Agricultural Extension Administration (LUHT4343) is one of courses that are being revised.

Formative evaluation could be defined as the process of providing and utilizing information as a base for making decisions in improving the quality of an instructional product or program (Suparman, 2001). The results of the formative evaluation are used to improve the quality of printed learning materials during revision (Dick, Carey, & Carey, 2009).

Related to the dynamics within the agricultural extension system which has undergone a lot of changes since the agricultural, fishery, and agroforestry development revitalization agenda was established in 2005, it has become important to align the Agricultural Extension Administration printed learning materials to the rapid developments in the field of agricultural extension system.

The first phase in conducting the evaluation of printed material for the Agricultural Extension Administration course was done in two steps. The first step was conducting evaluation from two content experts and one instructional designer, followed by one-on-one evaluation by three students and conducting evaluation by small group of students (9 students) evaluation. Based on the each step of evaluation we revised Modules #2 dan Module #5, and a field trial evaluation was done in the second phase of study and will be explained in this article.

According to Farida *et al.* (2013), there are some revisions that should be done in the first phase of evaluation related to: 1) the instructional objective formulation, 2) the scope of the material, 3) the contents of the material should be aligned to the Agricultural, Fishery and Forestry Extension System (Law number 16, Year 2006), 4) the terminology used, 5) the description of illustrations such as tables and examples, and 6) exercises, summaries, and formative tests in the Learning Activity Section in the modules.

Therefore, a field trial evaluation is needed to evaluate the level of readability of the Agricultural Extension Administration learning material build from the first phase of study. There are two modules (Module #2 and #5) used in the study. The purpose of this article is: 1). to explain Module #2 and Module #5's level of readability, and 2) to generate analysis based on pre and post test evaluation for Module #2 and Module #5.

METHODS

The design of the study was a formative evaluation research. Thirty student samples were taken from Serang Regional Office. Data were analyzed using quantitative and qualitative analyses. The students samples are randomly selected from Serang Regional Office. Data analysis in this study included quantitative and qualitative analyses. To

compare student achievement before and after reading and studying the modules was conducting by pre-test and the post-test followed-up with a significant difference test using the one sample t-test.

RESULTS AND DISCUSSION

There are many studies have been done about learning material evaluation. According to Ekawarna's findings (2007), learning materials which are designed and developed based on good instructional principles could help students in the learning process and help the lecturers in reducing the time needed to present the material and increasing the consultation time for students. Pribadi *et al.* (2005) explained that the effort to maintain printed learning material quality is done through the involvement of academic staff as the course instructional designer and the technical staff in multi media production center. Continuous reviewing and revising is employed in developing printed learning materials.

Suhartono *et al.*'s study (2010) about one of the learning materials in the Elementary School Teacher Education Study Program found that the presentation of the material often overlapped and the material coverage was at times (54%) irrelevant to the topics discussed. Hermaini *et al.* (2010) found that one of the materials in the Early-Age Education which is meant to facilitate the students' learning process needs some corrections and revisions in substance, system, and comprehensiveness of learning material.

In the first phase of the study, the quality of the materials was evaluated by two content experts and one instructional design expert. Expert reviews are meant to obtain an outsider's view of the learning material content. The initial review was about the materials in the two modules, Module #2 and Module #5. Based on the review, it was concluded that the contents of both modules need to be revised, the materials were no longer valid because they were not in line with the current developments in the knowledge, which are now aligned to the Agricultural, Fishery and Forestry Extension System (Law Number 16, 2006).

The results of the first phase of study for Agricultural Extension Administration learning material are : 1) improving the the instructional objective formulation, 2) improving the scope of the materials based on the new instructional objective formulations, 3) improving the contents of the materials according to Law number 16, 2006, 4) updating the terminology used in the modules, 5) improving the illustrations such as tables and examples, and 6) improving exercises, summaries, and formative tests (Farida, *et al.*, 2013).

After conducting review by content experts and instructional design experts, the revision has been made to Module #2 and Module #5. After revisions completed, the learning materials were re-evaluated by a small group of students consist of nine students. The result of the first phase of study was two revised modules that are ready for field trial analysis.

The results and discussion in the second phase of the study from field trial analysis explained the readability level of Agricultural Extension Administration learning material for Module #2 and Modul #5. The results of the field trial included the students' explanation of the following points: 1) whether the module materials were easy to understand; 2) whether the material in the modules were able to encouraged independent

learning; 3) whether the examples in the module clarify the materials; 4) whether the illustrations in the module were relevant to the materials; 5) whether the summaries provided in the module could be understood, and 6) whether the formative test provided in modules could be understood.

The Materials in the Module were Easy to Understand

The responses from the respondents to the question of whether the module materials were easy to understand were summarized in Table 1.

Table 1. The Distribution of Respondents

Variable	Module	Category	Number	Percentage
The module materials were easy to understand	Module #2	Yes	28	93.4
		No	0	0
		Less than satisfactory	1	3.3
		Satisfactory	1	3.3
		Total	30	100
	Module #5	Yes	27	90
No		3	10	
Total		30	100	

Based on the findings in Table 1, it can be seen that 93.4% respondents for Module #2 and 90% for Module #5, said that the materials in the modules are easy to understand. Students who said the opposite, had the following arguments:

“The materials were difficult to understand because there were too many explanations, they do not go straight to the definitions or meaning”.

The Module Materials Encouraged Independent Learning

The respondents’ answers to the question of whether the materials in the modules were able to encourage independent learning were summarized in Table 2.

Table 2. The Distribution of the Respondents

Variable	Module	Category	Number	Percentage
The materials in the module encouraged independent learning	Module #2	Yes	29	96.7
		No	1	3.3
		Total	30	100
	Module #5	Yes	27	90
No		3	10	
Total		30	100	

Based on the finding in Table 2, it can be seen that 96.7% respondents for Module #2 and 90% for Module #5, said that the materials in the module could encourage independent learning. As for those who said that group study is better for studying the modules had the following arguments:

“Everybody has their own business; sometimes we don’t have time to open the modules. It is better to study in groups, because by studying together, we can open the modules and study them”,

”...don’t understand the terminology, there should be a glossary”.

The Examples Clarify the Materials

The respondents’ answers to the question of whether the examples in the module could clarify the materials were summarized in Table 3.

Table 3. The Distribution of the Respondents

Variable	Module	Category	Number	Percentage
The examples clarified the materials	Module #2	Yes	23	76.7
		No	1	3.3
		Less than satisfactory	5	16.7
		Satisfactory	1	3.3
	Total	30	100	
	Module #5	Yes	27	90
		No	3	10
	Total	30	100	

Based on the finding in Table 3, it can be seen that 76.7% respondents for Module #2 and 90% for Module #5, said that the examples given could clarify the materials. There were 16.7% respondents who said that Module #2 was less than satisfactory with the following reasons:

“Too many examples, it would be better to give fewer but more easily understood examples”.

There were 10% respondents who claimed that Module #5 was not easy to understand with the following reasons:

“Please include an example for a frame for planning a program comprehensively.”

The Relevance between Illustrations and the Materials

The respondents' answers to the question of whether the illustrations in the module were relevant to the materials were summarized in Table 4.

Table 4. The Distribution of the Respondents

Variable	Module	Category	Number	Percentage
The illustration contents were relevant to the materials	Module #2	Yes	19	63.3
		No	7	23.3
		Less than satisfactory	2	6.7
		Satisfactory	2	6.7
		Total	30	100
	Module #5	Yes	26	86.7
		No	1	3.3
		Less than satisfactory	1	3.3
		No answer	2	6.7
		Total	30	100

Based on the finding in Table 4, it can be seen that 63.3% respondent for Module #2 and 86.7% for Module #5, said that the illustration contents were relevant to the materials. There were 23.3% respondents who said that the illustration contents for Module #2 were not relevant, giving the following reasons:

“Figure 2.22 is not clear and difficult to understand; the illustration is not the same as the reality found in existing farmer groups”.

There respondent who stated that the illustrations in the module were not relevant with the following reasons:

“More illustrations need to be added; it is difficult to practice in the field (especially for those who do not work as extension workers)”.

The Exercises Given are Comprehensible

The respondents' answers to the question of whether the exercises provided in the module could be understood were summarized in Table 5.

Table 5. The Distribution of the Respondents

Variable	Module	Category	Number	Percentage	
The exercise contents provided could be understood	Module #2	Yes	25	83.3	
		No	2	6.7	
		Less than satisfactory	1	3.3	
		No answer	2	6.7	
			Total	30	100
	Module #5	Yes	25	83.3	
		Less than satisfactory	4	13.3	
		No answer	1	3.3	
		Total	30	100	

Based on the finding in Table 5, it can be seen that 83.3% respondents for Module #2 and for Module #5, said that the exercises provided were in line with the materials. There were 6.7% respondents who said that the exercises in Module #2 were not satisfactory and 3.3% respondent said they were not relevant with the following reasons:

“the illustration was not clear and difficult to understand; it was different from the condition of existing farmer group”.

Only 3.3% respondent said that Module #5 could not be understood, and 13.3% respondents said that it was not really comprehensible with the following reasons:

“it was difficult to understand how to determine the best time to collect data and to authorize the extension program”.

“If we are used to the real world or we are exposed to mass media, we could understand it, but in practice it is difficult to implement because some people are open to new ideas and others are not.”

The Summaries are Easy to Understand

The respondents' answers to the question of whether the summaries provided in the module could be understood were summarized in Table 6.

Table 6. The Distribution of the Respondents

Variable	Module	Category	Number	Percentage
The summaries provided could be understood	Module #2	Yes	27	90
		No	1	3.3
		Less than satisfactory	1	3.3
		No answer	1	3.3
				Total

Variable	Module	Category	Number	Percentage
	Module #5	Yes	26	86.7
		Less than satisfactory	1	3.3
		Satisfactory	1	3.3
		No answer	2	6.7
		Total	30	100

Based on the finding in Table 6, it could be seen that 90% respondents for Module #2 and 86.7% for Module #5, said that the summaries provided could be understood. There was only 3.3% respondent who said that it was less than satisfactory and respondent who said it could not be understood with the following reasons:

“The summaries did not have enough details from the sub-chapters”.

The Formative Tests were Easy to Understand

The respondents’ answers to the question of whether the formative tests provided in the module could be understood were summarized in Table 7.

Table 7. The Distribution of the Respondents

Variable	Module	Category	Number	Percentage
The formative tests could be easily understood	Module #2	Yes	26	86.7
		No	1	3.3
		Satisfactory	2	6.7
		No answer	1	3.3
	Total	30	100	
	Module #5	Yes	26	86.6
		No	2	6.7
		No answer	2	6.7
		Total	30	100

Based on the finding in Table 7, it can be seen that 86.7% respondents for both Module #2 and Module #5, said that the summaries provided are easy to understand. Only 3.3% respondent said that the formative tests given in Module #2 were not easy to understand and 6.6% respondents said they were quite easy to understand with the following reasons:

“The formative tests were easy to understand but the explanations were too extensive”.

Only 6.7% respondents said that the formative tests in Module #5 were not easy to understand and another 6.7% respondents abstained. The statements given by the students were, among others:

“The questions were difficult to solve independently.”

The Results of the Pre-test and Post-test Analyses

The results of the students’ pre-test and post-test before and after studying Module #2 are summarized in Table 8 and Table 9.

Table 8. The Statistical Test Results for the Pre-test and Post-test for Module #2

Type of test	N	Average	Standard deviation	Average Standard Error
<i>Pre-test</i>	28	4.68	1.467	0.277
<i>Post-test</i>	28	5.61	2.514	0.475

From the results of the pre-test and post-test for Module #2, there was an increase in the students’ ability in answering the questions given. The average score for the pre-test was 4.68, after the module was given to the students to study for 1 (one) week, the average score for the post-test increased to 5.61. Therefore, Module #2 which was handed to the students to study for one week could increase the students’ understanding of the materials presented.

Table 9. The Results of the Significant Difference Test (t-test) for Module #2

	t	df	Sig. (2-tailed)*	Mean Difference	Lower	Upper
<i>Pre-test</i>	16.876	27	0.000	4.679	4.11	5.25
<i>Post-test</i>	11.801	27	0.000	5.607	4.63	6.58

* $\alpha = 0.05$

After the students studied the materials in Module #2, there was an increase in the comprehension of the materials in Module #2 and they were significantly different.

Statistical tests were also done on the pre-test and post test results for the materials in Module #5. The results of the statistical tests on the students’ pre-test and post-test for Module #5 are summarized in Table 10, and was followed-up with a significant difference test using the one sample t-test (Table 11).

Table 10. The Results of the Statistical Tests for Module #5

Type of test	N	Average	Standard deviation	Average Standard Error
<i>Pre-test</i>	28	6.21	1.750	0.331
<i>Post-test</i>	28	6.18	2.539	0.480

Based on higher standard deviation on post test, means that the students' scores were more varied; some high and some low. Handing over Module #5 to the students for studying for one week increased the scores for some students and decreased them for others. The decrease in the post-test scores means that the module given to the students did not provide much help for the students in increasing their understanding of the materials. This could be because many of the students did not read or study the module well, reflected in their less than satisfactory post-test results. Therefore, Module #5 needs revisions and improvements so that it would be easier for the students to study and to understand.

Table 11. The significant difference test (t-test) for Module #5

	t	df	Sig. (2-tailed)*	Mean Difference	Lower	Upper
<i>Pre-test</i>	18.787	27	0.000	6.214	5.54	6.89
<i>Post-test</i>	12.875	27	0.000	6.179	5.19	7.16

* $\alpha = 0.05$

Based on the finding in Table 11, it can be concluded that after the students studied the materials in Module #5, there was a slight decrease in their understanding of the materials in Module #5 and there was a significant difference. The decrease in the post-test scores means that the module given to the students did not provide much help for the students in increasing their understanding of the materials. This could be because many of the students did not read or study the module well, reflected in their less than satisfactory post-test results. These findings suggested that Module #5 need revisions and improvement in order to make it easier for the students to study and to understand.

Suggestions and Corrections from Students

In general, the suggestions and corrections for Module #2 and Module #5 were : 1) the modules should be designed to be more attractive, 2) more illustrations/tables need to be added to make the materials more comprehensible, 3) there needs to be more related materials such as the most current information, 4) the examples given should be simplified, 5) the explanations made briefer and go straight to the discussion to make it more effective and efficient, 6) the answer key should include feedback, and 7) need needs to be a glossary for difficult/foreign terms.

Conclusions

The conclusions obtained from the field trial analysis concerning the readability level for Module #2 and #5 for Agricultural Extension Administration are that the learning

materials are easy to understand, the materials could lead the students in self-learning; the exercises given are appropriate and related to the content, the summaries given could be understood, and there aren't enough examples and the illustrations are not suitable enough. Based on the pre- and post-test analysis, it can be concluded that after students studied the materials in Module #2, there was an increased ability of students for mastering of the contents of Module #2 and it significantly different before and after reading the module. On the other hand, for Module #5, there was a decreased ability of students to master the content of the learning material and it was significantly different before and after reading the module. Some suggestions and improvements have been proposed by students to improve the quality of the learning material of Modules #2 and #5 for Agricultural Extension Administration.

Some recommendations were proposed as a result of this study. Firstly, re-writing and revising the learning materials of Module #2 and #5 in order to accommodate the proposed improvements and suggestions from students, and secondly, conducting further research to create non-printed course materials to improve the quality and readability of the learning materials.

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