E-Module Development Instruments on the Topic of Free-range Chicken Eggs Productivity as Lessons for the Covid-19 Pandemic Era

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E-Module Development Instruments on the Topic of Free-range Chicken Eggs Productivity as Lessons for the Covid-19 Pandemic Era

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Abstract: E-Module Development Instruments on the To of Free-range Chicken Eggs Productivity as Lessons for the Covid-19 Pandemic Era. This study aims to produce an e-Module Development instrument for Integrated Chemistry Learning STEM Subject Entrepreneurship TopicThe Productivity of Free-range Chicken Eggs as a Lesson in the Era of the Covid-19 Pandemic, valid and practical. This research is a type of development research, using the ADDIE model (Analysis, Design, Development, Implementation, Evaluation) combined with the evaluation of the Tessmer formative test. The subjects of this research were lecturers and students of Chemistry Education Faculty of Teacher Training and Education, Universitas Sriwijaya. Tessmer's formative test consists of an expert review stage producing an average Aiken's coefficient value of 0.90; 0.93; and 0.94 in the high category, for each instrument validation score of material, pedagogy, and practicality. The one to one and small group test stages are carried out by obtaining qualitative input from student respondents as users. The results showed that the resulting e-module validation instrument had met the valid and practical criteria.
Keywords: ADDIE Development Instrument, Free-range Chicken

Abstrak: Instrumen Pengembangan E-Modul Topik Produktivitas Telur Ayam Buras Sebagai Pembelajaran Era Pandemi Covid-19. *Penelitian ini bertujuan untuk menghasilkan instrumen Pengembangan e-Modul Pembelajaran Kimia Terintegrasi STEM Mata Kuliah Kewirausahaan Topik Produktivitas Telur Ayam Buras sebagai Pembelajaran Era Pandemi Covid-19, yang valid dan praktis. Penelitian ini merupakan jenis penelitian pengembangan, menggunakan model ADDIE (Analysis, Design, Development, Implementation, Evaluation) yang dikombinasikan dengan evaluasi tes formatif Tessmer. Subjek penelitian ini adalah dosen dan mahasiswa Pendidikan Kimia FKIP Universitas Sriwijaya. Tes formatif Tessmer terdiri atas tahap expert review menghasilkan rata-rata nilai koefisien Aiken's sebesar 0,90; 0,93; dan 0,94 dengan kategori tinggi, untuk masing-masing skor validasi instrument materi, pedagogi, dan kepraktisan. Tahap uji one to one dan small group dilakukan dengan mendapat masukan secara kualitatif dari responden mahasiswa sebagai user". Hasil penelitian menunjukkan bahwa instrumen validasi e-modul yang dihasilkan telah memenuhi kriteria valid dan praktis. Disarankan hasil penelitian ini dilakukan uji terbatas atau field test di kelas.*

Kata kunci: *Instrumen Pengembangan ADDIE, Ayam Buras*

▪ INTRODUCTION

Learning problems in the Chemistry Education Program, Faculty of Teacher Training and Education, Sriwijaya University are 1) learning chemistry in the era of the covid 19 pandemic, students and lecturers are not allowed to meet face-to-face during lectures; 2) it is necessary to research instruments to validate the development of e-modules for Chemistry Education Faculty of Teacher Training and Education, Universitas Sriwijaya on the topic of increasing the productivity of native chicken eggs, as a follow-up to suggestions from the research results of Desita (2021) and Tias (2021); 3) The number of teaching materials in the form of chemistry learning modules for Entrepreneurship courses is still lacking or small; 4) Entrepreneurship courses are important in supporting the program of the Minister of Education, Culture and Research, namely "Merdeka Belajar Kampus Merdeka" (MBKM). 5) The nation will progress if the number of entrepreneurs is at least 2%.

The purpose of this study is to describe the instrument validity, pedagogy, and practicality for the Development of e-Module Chemistry Learning Approach STEM Entrepreneurship Course in the Chemistry Education Study Program, Faculty of Teacher Training and Education, Sriwijaya University. the topic of increasing the productivity of native chicken eggs.This research is beneficial for: 1) students who are going into entrepreneurship, 2) students who will improve learning outcomes for Entrepreneurship courses, in the era of the covid 19 pandemic; 3) Chemistry Education Study Program, Faculty of Teacher Training and Education, Sriwijaya University to reduce student study period at Sriwijaya University, 4) The Indonesian Ministry of Education, Culture and Research supports and succeeds the Entrepreneurship program in MBKM (Merdeka Belajar Kampus Merdeka); and 5) other researchers as research references in the field of entrepreneurship.

Understanding the concept and its application in real life. In the era of the COVID-19 pandemic, students are now required to be able to study independently, not depending only on educators so that reliable learning resources are needed for learning activities (Widiyani, 2021).Learning resources can be in the form of chemistry learning modules and e-modules. In the modules and e-modules it contains activities andtasks as independent learning. This independent learning without face to face, online in this era of the covid 19 pandemic can be in the form of online learning (Sarilawati, 2021). Furthermore, according to Mardhiya (2021), Princess (2020), and Madyani (2019) online learning requires creativity (Prastowo, 2011),self-efficacy in the use of computers, independence in learning, self-control, motivation, and self-efficacy in online communication. The online learning media most often used by students are e-learning and whatapps group, all of which support the development of modules and e-modules along with e-module instruments for chemistry learning STEM Approach for Entrepreneurship Course at the Chemistry Education Study Program, Faculty of Teacher Training and Education, Sriwijaya University.

The next important thing is that if a country is going to develop, then 2 percent of its population are entrepreneurs. Indonesia with a population of 220 million people, the number of entrepreneurs is 4,400,000 people. However, only 400,000 Indonesian entrepreneurs are 0.18 percent (Mulyani, 2011;Santoso, 2013). The Indonesian government does not intend or strongly object to appointing all undergraduate, postgraduate and doctoral graduates to become State Civil Apparatus or Civil Servants, so that in every university in Indonesia there is an Entrepreneurship Course. Sriwijaya University, a state university in South Sumatra, is very keen to support this

entrepreneurial activity.From the documentation, letter number 0045/UNG/SB3.BAK.KM/2020 was obtained for the Student Entrepreneurial Program socialization event on February 25, 2020 in the Multipurpose Room of the Sriwijaya University Student Center Building, Indralaya Campus, as Sriwijaya University's support for student entrepreneurship. Furthermore, entrepreneurial development in universities needs to be carried out to become young entrepreneurs (Depdiknas, 2008) and in accordance with the explanation of the Minister of Education, Culture and Research dated January 24, 2020 that Entrepreneurship is one of the activities in the Independent Learning Campus. It also supportsdevelopment of modules and e-modules along with e-module instrument for chemistry learning STEM Approach for Entrepreneurship Course at the Chemistry Education Study Program, Faculty of Teacher Training and Education, Sriwijaya University.

From the data di Chemistry Education Study Program, Faculty of Teacher Training and Education, Sriwijaya University, teaching materials in the form of e-modules for the Entrepreneurship course, there are only 9 titles, so to achieve 14 meetings (2 more meetings for the mid-semester and end-semester exams so that all meetings is 16 times) is still very much needed. Therefore, it is necessary to develop a new module title, namely Development of e-Module for Chemistry Learning Approach Entrepreneurship CourseScience Technology Engineering Mathematical (STEM). The title of the module is Development of e-Module for Chemistry Learning STEM Approach for Entrepreneurship Course at the Chemistry Education Study Program, Faculty of Teacher Training and Education, Sriwijaya University, Topic of Increasing the Productivity of Free-range Chicken Eggs. The STEM stage is in the form of: 1). There is a problem; 2). Troubleshooting plans and programming (Muhaimin, 2020); 3). Trial troubleshooting; 4). Reporting on the results of problem solving trials (Word, 2017 andBerries, 2012). The development of the Module and e-Module uses the ADDIE model (Capraro, 2013) and Tessmer's (1998) formative test evaluation. ADDIE stands for Analysis Design Development Implementation Evaluation.After the modules and e-modules have been developed using the ADDIE model, the design of the modules and e-modules needs to be validated using Tessmer's (1998) formative test evaluation. The validation consists of material validation, pedagogical validation, practicality and/or design validation. The evaluation stages of Tessmer (1998) were expert, one-to-one, and small group.

The development of this instrument is very important as done by Seftryanesti (2019) and Salsabila (2019) to design the level of validity and practicability of e-modules, because every development research requires this stage. Likewise with the development of chemistry learning e-module instruments in the Covid 19 Pandemic era, the STEM Approach for the Entrepreneurship course at the Chemical Education Study Program, Faculty of Teacher Training and Education, Universitas Sriwijaya, which has valid material, pedagogy, and practicality for the topic of Increasing the Productivity of Free-range Chicken Eggs.This is in accordance with the suggestions from previous researchResearch has been carried out on the needs analysis of the development of e-modules for learning chemistry with the STEM approach for the Entrepreneurship course at the Chemistry Education of the Faculty of Education, Sriwijaya University, on the topic of increasing the productivity of free-range chicken eggs. This is in accordance with the research suggestions of Desita (2021) and Tias (2021) to be followed up with research on the preparation of the e-module instrument. Respondents were of the opinion that there was a business plan to increase the productivity of native chicken

eggs. They strongly agreed, namely 50%, agreed 38% and hesitated 12% (Desita, 2021). Respondents have the attitude that they will need this e-module by 50% strongly agree and agree 42% and then 8% doubt.

Results perthe instrument's validation count was compared with Aiken's (1985) score or coefficient value. Aiken's coefficient formula v = s/[n(c-1)]. "v" is the calculated Aiken coefficient; s is r minus lo; "r" is the number given by the validator or respondent; "lo" is the lowest rating score; "n" is the number of assessors or validators or respondents; and "c" is the highest validity rating score.

▪ METHOD

This study uses the ADDIE development model and Tessmer formative evaluation. In connection with the Analysis stage (needs analysis, curriculum analysis, characteristic analysis) of e-model development, a draft e-module has been produced in the form of a specific prototype of the STEM approach chemistry learning e-module in the entrepreneurship course of the Chemistry Education Study Program, Faculty of Teacher Training and Education, Universitas Sriwijaya. This research was conducted in the odd semester of 2021/2022 at the Chemistry Education Study Program, Faculty of Teacher Training and Education, Universitas Sriwijaya. The research procedure for Tessmer's formative evaluation stage is as follows:

Expert Review

At this stage, a questionnaire for material validation instruments, pedagogy, and practicality was compiled. The researcher designs and develops the e-module draft, the e-module draft is evaluated independently (self-evaluation) by the researcher, then the e-module draft is produced in the form of a specific prototype. The questionnaire instrument and the specific prototype were given to experts or experts or lecturers of Chemistry Education Faculty of Teacher Training and Education, Universitas Sriwijaya for validation. Validation of the material, pedagogy and practicality questionnaire using the Aiken Coefficient formula.

One-to-One

At this stage, a practical test of the specific prototype e-module draft was carried out and a practicality questionnaire was given to individual students by work through. The practicality/design questionnaire data is calculated using the Aiken Coefficient formula

Small Group

At this stage a wider trial is carried out than the one-to-one stage, regardingpracticality. The specific prototype e-module draft and practicality questionnaire were given to students in groups/groups using practical instruments. The practicality/design questionnaire data was also calculated using the Aiken Coefficient formula.

▪ RESULT AND DISCUSSION

The products of this research are material validity instruments, pedagogy and practicality and e-Module Chemistry Learning STEM Approach Entrepreneurship Course at the Chemistry Education Study Program Faculty of Teacher Training and

Education, Universitas Sriwijaya which is valid and practical. The results and research procedures are:

Expert Review

In this step, *specific prototype* and draft instrument validity (material, pedagogy, and practicality) created by the researcher as a result of the Design phase (from ADDIE Development) given to the validator. The validators are 2 lecturers with the initials ARI and MEH who are experts in development research.

The results of the calculation of the Aiken coefficient of the two validators using a material validation questionnaire, pedagogy, practicality and design, respectively, are 0.90; 0.93 and 0.94. Based on the calculation results, the e-module validation instrument is in the high validity category, above 0.80 as standard criteria > 0.80 to 1.00 is in the high validity category (Aiken's 1985). Figure/Graph of Aiken's Coefficient of the two validators as follows:

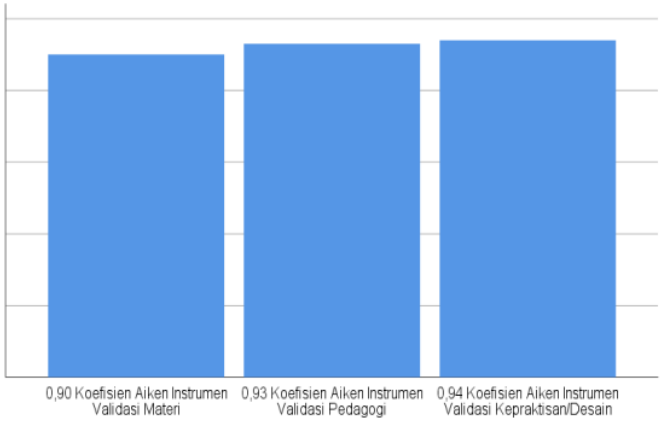


Figure 1.. Aiken's Coefficient of Material Validation Instruments, Pedagogy, and Practicality.

From Figure 1 it shows that the material validation, pedagogy, and practicality instruments are 0.90; 0.93; and 0.94 is in the category of high validity because it is greater than 0.80.

Aspects of indicators in the instrument were validated regarding the material 1) The suitability of the material with the final ability of each learning stage in the Topic e-Module Increasing the productivity of free-range chicken eggs. 2) The suitability of the material with CPMK 2 in the Topic e-Module Improving the productivity of free-range chicken eggs. 3) The accuracy of the questions in the Topic module for Increasing the productivity of free-range chicken eggs. 4) The accuracy of the chemical material in the Topic Module Improving the productivity of free-range chicken eggs. 5) Extensiveness of chemical material on the internet in the Topic Module for Increasing the productivity of free-range chicken eggs. 6) The accuracy of the chemical material in the Topic Module Improving the productivity of free-range chicken eggs.

Aspects of indicators in the instrument were validated regarding pedagogy 1)The suitability of the learning steps with the final ability of each learning stage in the Topic e-Module Improving the productivity of free-range chicken eggs. 2) The suitability of the learning steps with the final ability of each learning stage in the Topic e-Module

Improving the productivity of free-range chicken eggs. 3) Relevant to the presentation on the Topic e-Module Improving the productivity of free-range chicken eggs. 4) Compliance with the language rules in the e-Module Topic Improving the productivity of free-range chicken eggs. 5) Fostering Creativity in the Topic e-Module Improving the productivity of free-range chicken eggs. 6) Learning in the module is in accordance with the STEM steps in the e-Module Topic Improving the productivity of free-range chicken eggs. 7) STEM Components in the e-Module Topic Improving the productivity of free-range chicken eggs. 8) Learning in the e-module is in accordance with the STEM steps in the e-Modul Topic Increasing the productivity of free-range chicken eggs. 9) Learning in the module is in accordance with the STEM steps in the e-Module Topic Improving the productivity of free-range chicken eggs. 10) Learning in e-modules is in accordance with the latest steps in the Covid-19 pandemic era.

Each indicator in this instrument (material validation, pedagogy and practicality) consists of four more descriptors. In the indicator point 10) the learning in e-modules is in accordance with the current atmosphere of the Covid 19 Pandemic era, the descriptors are: a) suitable for the learning atmosphere in the covid 19 pandemic, b) suitable for the learning atmosphere for "online" (online), c) suitable for independent learning atmosphere, and d) suitable for learning atmosphere using cyber (cyber).

Aspects of indicators in the instrument were validated regarding design and or practicality 1)The attractiveness of the e-module Topic Improving the productivity of free-range chicken eggs. 2) Cover of the e-module Topic Improving the productivity of free-range chicken eggs. 3) The suitability of the letters used in the e-module Topic Improving the productivity of free-range chicken eggs. 4) Display of posts in the e-Modul Topic Improving the productivity of native chicken eggs. 5) Display of posts in the e-Modul Topic Improving the productivity of native chicken eggs. 6) Usagelanguage/sentence in e-Modul Topic Improving the productivity of free-range chicken eggs.7) Presentation of tables/pictures in e-ModulesTopic Improving the productivity of free-range chicken eggs. 8)Color composition in e-ModulTopic Improving the productivity of free-range chicken eggs. 9) The balance of layout position (title, author and logo) module Topic Improving the productivity of free-range chicken eggs. This indicator aspect is assessed, scored and commented on by the two expert validators.

The composition of the specific prototype consists of a cover page, introduction, table of contents, list of pictures, list of tables, instructions for using modules for students and for lecturers, introduction, initial test, 13 steps of learning activities, learning activities, closing, final test, pre/final test answer key, bibliography. The validator provides assessments and comments on specific prototypes andThe draft validity instrument and e-module are as shown in the following figure:

Before revision

Petunjuk :

1. Berikan tanggapan Bapak/Ibu dengan memberikan nilai pada ko
memberikan tanda (√) pada kolom skor yang disediakan dengan ke
4 = Keempat deskriptor muncul pada e-modul
3 = Hanya 3 deskriptor muncul pada e-modul
2 = Hanya 2 deskriptor muncul pada e-modul
1 = Hanya 1 deskriptor muncul pada e-modul atau tidak ada de
2. Komentar/Saran/Kritik yang diberikan untuk memperbaiki modul

No	Indikator		Deskriptor	(√
1	Kesesuaian materi dengan kemampuan akhir tiap tahap belajar pada e-Modul Topik Peningkatan produktivitas telur ayam Buras	1	Materi yang disajikan sesuai dengan Sub CPMK 1	
		2	Materi yang disajikan sesuai dengan Sub CPMK 2	
		3	Materi yang disajikan sesuai dengan masalah nyata	
		4	Materi yang disajikan sesuai	

After revision

Petunjuk :

1. Berikan tanggapan Bapak/Ibu dengan memberikan nilai pada kolom
memberikan tanda (√) pada kolom skor yang disediakan dengan ketera
4 = Keempat deskriptor muncul pada modul
3 = Hanya 3 deskriptor muncul pada modul
2 = Hanya 2 deskriptor muncul pada modul
1 = Hanya 1 deskriptor muncul pada modul atau tidak ada deskript
2. Komentar/Saran/Kritik yang diberikan untuk memperbaiki e-modul

No	Indikator		Deskriptor	(√)
1	Kesesuaian materi dengan kemampuan akhir tiap tahap belajar pada e-Modul Topik Peningkatan produktivitas telur ayam Buras	1	Materi yang disajikan sesuai dengan Sub CPMK 1	
		2	Materi yang disajikan sesuai dengan Sub CPMK 2	
		3	Materi yang disajikan sesuai dengan masalah nyata	
		4	Materi yang disajikan sesuai	

Figure 2. Revision of the Material Validation Instrument, the module becomes an e-module.

All words in the validation instrument should be consistent, so that it is not ambiguous, not ambiguous, there is no doubt in it. So the word e-module must be consistent in the instrument, the word module was revised to become e-module.

Before revision

2. Komentar/Saran/Kritikyang diberikan untuk memperbaiki m

No	Indikator		Deskriptor
1	Kesesuaian materi dengan kemampuan akhir tiap tahap belajar pada Modul Topik Peningkatan produktivitas telur ayam Buras	1	Materi yang disajikan sesuai dengan Sub CPMK 1
		2	Materi yang disajikan sesuai dengan Sub CPMK 2
		3	Materi yang disajikan sesuai dengan masalah nyata
		4	Materi yang disajikan sesuai dengan pemikiran logis
2	Kesesuaian materi dengan CPMK 2 pada Modul Topik Peningkatan produktivitas telur ayam Buras	1	Materi yang disajikan dalam modul sesuai dengan pemikiran kritis
		2	Konsep-konsep yang disajikan dalam modul, inovatif
		3	Fakta-data sudah sistematis

After revision

2. Komentar/Saran/Kritikyang diberikan untuk memperbaiki n

No	Indikator		Deskriptor
1	Kesesuaian materi dengan kemampuan akhir tiap tahap belajar pada Modul Topik Peningkatan produktivitas telur ayam Buras	1	Materi yang disajikan sesuai dengan Sub CPMK 1
		2	Materi yang disajikan sesuai dengan Sub CPMK 2
		3	Materi yang disajikan sesuai dengan masalah nyata
		4	Materi yang disajikan sesuai dengan pemikiran logis
2	Kesesuaian materi dengan CPMK 2 pada Modul Topik Peningkatan produktivitas telur ayam Buras	1	Materi yang disajikan dalam e-modul membuat mahasiswa kreatif
		2	Konsep-konsep yang disajikan dalam modul, inovatif
		3	Fakta-data sudah sistematis

Figure 3. Revision of the word "critical" to "creative"

Characteristics of the approach *STEM* is a creative word so that in the material validation instrument for the e-module it needs to be replaced from the word critical to being creative.

Before revision	After revision

C. Kompetensi, Indikator dan Tujuan Perkuliahan

Kompetensi, Indikator dan Tujuan Perkuliahan Tujuan akhir yang dicapai setelah menyelesaikan modul ini tertuang pada tabel sebagai berikut:

Tabel Kompetensi, Indikator dan Tujuan Perkuliahan.

Kompetensi	Indikator	Tujuan Perkuliahan
	Mengerjakan soal *pretest*	Sebelum perkuliahan mahasiswa mengerjakan soal test awal
	Menganalisis jenis wirausaha yang mungkin dapat dikembangkan sesuai dengan minat.	Dari *brosing* internet mahasiswa dapat merancang usaha yang diminatinya
	Judul wirausana	Dari *brosing* internet mahasiswa dapat menyusun judul wirausaha yang diminatinya

D. Capaian Pembelajaran Mata Kuliah (CPMK)

Mahasiswa mampu memunjukkan sikap tanggungjawab untuk memahami Kuliah Kewirausahaan (CPMK 1). Mahasiswa mampu menerapkan pemikiran logis, kreatif, sistematis, inovatif, dalam konteks peranan berwirausaha dalam kehidupan sehari-hari kaitannya dengan masalah nyata mengenai peningkatan produktivitas telur ayam buras (CPMK 2). Mahasiswa mampu membuat rancangan usaha pembudidayaan ayam buras petelur dengan beberapa jenis pakannya.

Figure 4. Results Before and After Revision in e-modules.

Revision of Competency Indicators, and Objectives into Subject Learning Outcomes (CPMK). CPMK is the result of the 2021 Chemistry Education curriculum revision workshop. All Semester Implementation Plans (RPS) are guided by the 2021 Curriculum for students starting from the 2021/2022 academic year.

One-to-one

In the one-to-one stage, 3 students with the initials AA, PR and IN with a cumulative grade point average (GPA) almost simultaneously represent students with low, medium and high IPL. This practicality validation instrument, which has been validated by the lecturer/expert earlier, was given to the 3 students, to fill out the questionnaire on the practicality of the e-module. Practical data collection is also carried out through a work through the process of drafting an e-module in the form of a specific prototype and showing it to each of the 3 students, so that students can directly comment. One-to-one stage revision as follows:

Before revision	After revision

Figure 5. Results Before and After Design Validation Revision

The design revision during the one-to-one stage was in the form of changing the color of the cover or cover of the e-module, at the beginning before the revision it was slightly darker and revised at the end after the revision, from a lighter color. The results of one-to-one activities are:*prototypes I*.

Small Group

At this stage, 3 groups of students, each group consisting of 3 students, so that 9 students with the initials EPA, YN, PLH, NL, WS, APD, TA, R, and TKAA were chosen randomly because their GPAs were not much different. The revisions before and after the Small Group stage are as follows:

Before revision	After revision
O. Tugas Mahasiswa Bacalah wacana di bawah ini! Tulislah 13 langkah dalam e-modul pembelajaran kimia pendekatan *STEM* Mata Kuliah Kewirausahaan di Pendidikan Kimia FKIP Universitas Sriwijaya? P. Umpan Balik	Jika ayam ouras betina akan mengeram maka manukan ayam ouras betina ini, maka ayam buras betina itu tidak jadi mengeramnya dan bertelur kembali. **O. Tugas Mahasiswa** Bacalah wacana di bawah ini! Tulislah 13 langkah dalam e-modul pembelajaran kimia pendekatan *STEM* Mata Kuliah Kewirausahaan di Pendidikan Kimia FKIP Universitas Sriwijaya? **P. Umpan Balik** Jika Anda telah mengerjakan soal-soal di atas, maka hitunglah nilai yang

Figure 6. Results Before and After Revision on the Small Group Test.

Figure 6 is the result before and after the Small Group Test, students as users suggest 30 Times New Roman 30 letters "Write 13 steps in the e-module chemistry learning approach STEM Entrepreneurship Course in Chemistry Education Faculty of Teacher Training and Education, Universitas Sriwijaya?" Student respondents suggested the same as font font, namely Times New Roman fond 12. The beginning of writing fond 30 was intended to be a special concern for users that Part "O. Student Assignments" is the initial and final test of this e-module. It seems that the consistency of writing the letters takes precedence over that particular message.

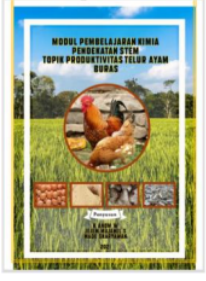
Before revision	After revision
	

Figure 7. Picture Before and after revision Cover said the topic of free-range chicken egg productivity.

In Figure 7 there are suggestions for input from the stage *Small Group* that "the topic of free-range chicken egg productivity" in the e-module cover is the same as

"fond" with the previous word. This is in accordance with the title of this study, these words are a series or an inseparable package. Furthermore, the 9 students filled out a questionnaire using practical instruments and prototype I. The results of the small group activity were prototype II.

▪ CONCLUSION

From the description above, the material, pedagogical and practical validation instruments that have been developed and compiled from expert, one-to-one, and small group tests are in the high validity category.Tessmer's formative test consists of an expert review stage producing an average Aiken's coefficient value of 0.90; 0.93; and 0.94 with a high valid category, for each instrument validation score of material, pedagogy, and practicality.

▪ ACKNOWLEDGMENT

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▪ REFERENCES

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