

Development of Interactive E-Modules Based on Google Docs in Basic Concepts of Biology Curriculum MBKM UNIMED FIP PGSD Study Program

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ABSTRACT

Based on the objective conditions that occur in learning the Basic Concepts of Biology at PGSD FIP UNIMED, it is found that; 1) The Basic Biology Concept Course is a new course for developing the MBKM curriculum as a result of the recommendation for the 2020 HGPGSDI virtual meeting, 2) lectures during the COVID19 pandemic require student learning independence, 3) There has been no development of interactive E-modules that are in accordance with the demands of the curriculum. Merdeka Learns Merdeka Campus at this time, 4) the results of a tracer study which states that graduates of the PGSD study program still have inadequate skills in mastering IT or digital learning and mastery of subject practicums. The purpose of this study was to develop a product and conduct trials of the feasibility and effectiveness of the Development of an Interactive E-module Based on Google Docs in the Basic Biology Concept Course in the MBKM Curriculum for PGSD FIP UNIMED Study Program. This development research uses a 4-D model consisting of 4 stages of development, namely the definition stage, the design stage, the develop stage and the dissemination stage. In addition to producing interactive E-module products, it also provides students and lecturers with experience in conducting online lectures using the features in Google Docs so that lectures become more interactive, effective, and efficient. This research will produce interactive E-modules and will be disseminated in the form of ISBN modules, articles in indexed international proceedings, accredited international or national journals and will be registered as intellectual property rights (IPR).

Keywords: *Interactive, E-Modules, Google doc.*

1. INTRODUCTION

The statement of the Minister of Education and Culture (Mendikbud) of the Republic of Indonesia, Mr. Nadiem Anwar Makarim regarding the independence of learning is to give freedom and autonomy to educational institutions, and independence from bureaucratization, in this case lecturers are freed from complicated bureaucracy and students are given the freedom to choose their chosen field. he likes. From this statement came the policy known today as the Independent Learning-Independent Campus.

The Independent Learning Policy-Independent Campus has been implemented previously by 12 LPTKs, consisting of Medan State University, Padang State University, Jakarta State University, Yogyakarta State University, Unnes Semarang, Unesa Surabaya, UNG Gorontalo, UM Malang, UNM Makassar, UPI Bandung,

Undiksha Bali and Unima Manado, the activity was called the Nusantara Student Exchange (PERMATA). With the activities that have existed before, it makes it easier for institutions to support these policies. Furthermore, the strategy to achieve an independent campus involves the association of study programs to equalize perceptions about the curriculum used for the future. This has been previously carried out by lecturers from the Elementary School Teacher Education Study Program (PGSD) with the Association of Indonesian Elementary School Teacher Education Lecturers (HDPGSDI) Region II in 2020 with the workshop activities aimed at providing recommendations to several PGSD study programs in Indonesia regarding the distribution of curriculum or courses and then local study programs that adapt to their regions.

Recommendations for the formulation of CPL, CPMK and descriptions of the PGSD field cluster

courses for the independent learning program are the results of a Virtual Workshop conducted by the Regional II Elementary School Teacher Education Lecturer Association on 29 June – 2 July 2020 with the organizers of PGSD Study Programs in Riau Province.

One of the recommendations is regarding the distribution of curricula and courses and the use of naming courses in the elementary school class (Indonesian, Civics, Mathematics, Social Sciences and Science) but adapted to the local wisdom of each region. There are several courses that are recommended to be named the same, one of which is the subject of Basic Biology concepts which is changed and divided into

1) Basic Concepts of Physics and Chemistry, and 2) Basic Biology Concepts. The Biology Basic Concepts course becomes a new subject in the 2020/2021 even semester and begins to be taught to students of the 2020/2021 PGSD Study Program in the even semester so that there are no E-modules, teaching materials or modules as reading or guidance for students and lecturers. which is well structured for use in online learning and development as one of the MBKM courses in the PGSD FIP UNIMED Study Program. Course reading materials are needed by students as a guide or support for students to follow the lecture process in each course, so the most suitable reading material to support student independent learning in lectures during the Covid-19 pandemic is in the form of modules.

The module is a unit of planned learning activities, designed to help students complete certain goals and guide students in independent learning. Based on In current conditions, the Interactive E- module is one of the right ways to deal with the challenges of lectures, more effectively and efficiently. Interactive E-module development can be done with various applications such as Sigil application, Flipbook, Google Docs and others. Google Docs is a free web-based word processing, spreadsheet, presentation, form, and data storage service from Google. The development of interactive E-modules using applications will improve students' mastery of materials, concepts and skills in subjects including the Basic Biology Concepts course and current technology mastery skills so that the profile of PGSD graduates can answer the challenges of today's 21st century learning. This also follows up on the results of a tracer study conducted by the PGSD study program in March 2020 which found that PGSD graduates still have weaknesses in mastering Information Technology (IT), practical skills and mastery of foreign languages such as English. So that the learning carried out should be able to accommodate the results of the tracer study. So the development of application-based interactive e-models is very necessary to do.

According to the problems above, it was found that, 1) The Basic Biology Concept Course is a new course for developing the MBKM curriculum as a result of the

recommendation for the 2020 HGP GSDI virtual meeting, 2) lectures during the covid-19 pandemic require student learning independence, 3) There has been no development An interactive e-module that is in accordance with the demands of the current Merdeka Learning Campus (MBKM) curriculum, 4) tracer study results which state that graduates of the PGSD study program still have inadequate skills in mastering IT or digital learning and mastery of subject practicums. Based on some of the problems that have been stated above, the researchers are interested in conducting research on the Development of Google Docs-Based Interactive E-modules in the Basic Biology Concept Course in the MBKM PGSD Study Program FIP UNIMED.

According to Daryanto (2013: 9) a good e-learning module has several characteristics, namely self-instruction, self-contained, stand-alone, adaptive and user friendly. E-module is a learning module which in its presentation uses electronic media. So that the characteristics of the module are the same as the characteristics of the module, namely self-instruction, self-contained, stand-alone, adaptive and user friendly.

Self-instruction is an important characteristic of E-modules and must be contained in E-modules. An E-module must have clear instructions so that students are easy to use and students know what kind of learning objectives they have to achieve. Self contained, namely the subject matter presented in complete E-modules so that students can learn the material completely. Stand alone, namely E-learning modules must stand alone or not depend on other teaching materials or do not require other supporting tools in their use. If the E-learning module still requires other teaching materials in its use, then the E-learning module is not categorized as a stand-alone E-learning module. Adaptive, namely E-learning modules have the adaptability to the development of science and technology. A good e-learning module must be able to adapt to the development of science and technology. E-learning modules can be said to be adaptive if they are in accordance with the development of science and technology and are flexible to use. Meanwhile, what is meant by the user friendly characteristics of the E-module is that the learning E-module should be friendly or familiar with the user.

Google Docs is an online word processing application that has functions for word processing, creating and formatting text documents. Google Docs is similar to Microsoft Word. There are features that make it easier for users such as collaboration, convert files easily, see revision history features and can insert pictures, videos, audio, diagrams, tables and connect directly to the internet. According to O. Suwantarathip and Saovapa Wichadee (2014) also suggest that among many technologies, Google Docs is a learning medium that helps to apply a learner-centered approach in a shared learning environment. Because by having the relevant

document link, each participant can edit and even the editor will be listed in this application. Google Docs as a free web-based application that allows users to create word processing documents. This Google Docs application allows access to documents from any computer and enhances collaboration by providing a way to share documents with other people as editors or just reading by giving them a link or link to the document (Conner: 2008).

Parra [1] found that the Google Docs application is one of the most useful and valuable collaborative online group work tools. Google Docs allows users to edit documents written by other students and suggest modifications by writing comments to editing the document itself. This app has features that enable real-time collaborative learning. According to Weier (2010), there are several advantages of Google Docs, including: Easy to use, Free of charge, avoiding data loss due to hard disk damage, complete support and documentation, using a simple WYSIWYG (What You See Is What You Get) editor to format documents, check spelling, and so on. The advantages of using it as a word processor: can create Word documents, OpenOffice, RTF, HTML, or text, Upload documents that we already have, Sharing with others (via e-mail address) to edit or view documents and spreadsheets, edit documents online with whomever we choose, view revision history of documents and spreadsheets, publish documents online. With this facility, teachers can create online forms, such as making questionnaires, making multiple choice tests, or conducting real-time assessments of their students. The downside is that the use of Google Docs will be maximized if it is used online.

2. METHOD

This type of research is development research using a modification of the 4-D development model (Four-D Models) of Thiagarajan, Semmel and Semmel [2]. The purpose of development research is to assess the changes that have occurred over a certain period of time. [1]

This research was conducted in the Education Study Program for Elementary School Lecturers, Faculty of Education, State University of Medan (PGSD FIP UNIMED) on Jl. Williem Iskandar Pasar V Medan Estate, North Sumatra.

The subjects in this study were students of PGSD FIP UNIMED Even Semester 2020/2021 who took courses in the Basic Concepts of Biology course.

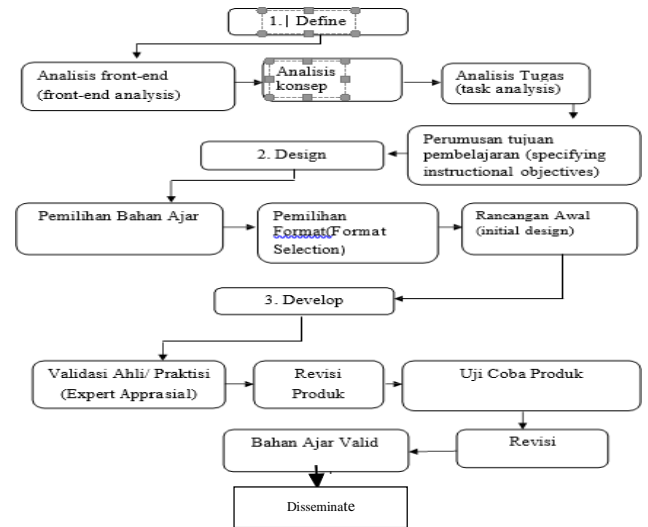


Figure 1 Development of 4 D models.

The stages in the development of the Practicum Guide are described as follows: 4D Model development, namely the defining stage, the design stage, the development stage and the dissemination stage.

Data analysis in this study will be divided into 2 types, namely (1) Data analysis of the validity of the Basic Biology Concepts Module E, (2) Analysis of test results to students. The process flow for carrying out research on the development of E Module Basic Biology Concepts can be seen in the fishbone image below:



Figure 2 Fisbone research development e module biology basic concept course PGSD FIP Unimed

4. RESULT AND DISCUSSION

The results that have been achieved in this study are the results of the validation of the E-module Basic Biology Concepts that have been carried out by a team of experts. Validation is carried out by a team of experts from universities. The validator team validates by using the validation sheet that has been prepared in the research development of the Basic Biology Concepts Module E. The results of the validation carried out by the validator

team showed that the draft E of the Basic Biology Concepts Module was in the good category. There are only a few in certain parts that need to be revised and improved by the development team. Some inputs from the expert team as the validator team of the Basic

Biology Concept Module E, which were developed include: (1) The learning objectives have not been explained in detail, (2) The use of spelling is still inconsistent, (3) the evaluation of lectures at the end of each chapter needs to be revised (4) the need for a concept map to help students understand, and (5) the use of the edmodo application as an e-learning Practicum Guide must be more interactive and varied.

In general, the results of the validation of the validator team for the development of the E-module of the Science E-module for High School Elementary School can be seen below:

3.1. Content Eligibility

3.1.1. Conformity of material description with KD

Material development in E-module E Basic Biology Concepts Module, KD developed must be adjusted to the semester lecture plan (RPS) Basic Biology Concepts that have been prepared by the KDBK IPA PGSD FIP UNIMED team. The facts and concepts presented have been quite accurate.

3.1.2. Material Accuracy

The material presented is accurate and shows accuracy in applying the concepts contained in elementary science learning. The material is also described in a clear, easy to understand, and appropriate use according to the subject matter, the material is presented using standard, coherent and clear Indonesian language. The material presented is easy for students to understand so that to understand it students do not depend on the explanation from the lecture supervisor. Such a situation certainly makes students in learning more relaxed and independent.

3.1.3. Up-to-date Materials

The material presented is adjusted to the current development of Basic Biology Concepts. The material is a description of the condition of elementary science development using the curriculum and problems that have to do with students' lives.

3.1.4. Encourage curiosity

Examples of media, descriptions, exercises, assignments or case examples presented in the E-modules E-modules for High School Science encourage students to try, think and experiment to find answers. In addition, when the work process requires further activity, it will foster student creativity. In the E-module Science E-module for High School Elementary School there are also various activities that can encourage students' curiosity,

thus providing opportunities for them to seek further information through reading activities, looking for references and discussing with other friends.

3.1.5. Practice and Test

The exercises presented are in the form of patterns and communicative exercises to master the materials being taught. The test materials presented are in accordance with the demands of competency standards and learning objectives to be achieved.

3.1.6. Complementary

To complete the lecture material, each unit or chapter is equipped with a concept map, keywords and a glossary. So that students can more easily understand the contents of each chapter in the E-Module of Science for High School Elementary School.

3.2. Serving Eligibility

3.2.1. Presentation Techniques

The systematic presentation of the E-module The E-module of Science for High School Elementary School is in the good category. In presenting the material in each chapter, it is seen that the concept maps, introduction, content, closing and evaluation are shown consistently in each chapter. The concept map contained at the beginning of each chapter describes the material, its description and the achievement of abilities that students will get after studying the material. The descriptions between chapters are proportional by considering the basic competencies that are supported by several illustrations in a balanced way according to the needs of each subject.

3.2.2. Presentation Support

The introduction at the beginning of the E-module contains the purpose of writing clearly and in detail, the way of learning that must be followed by students along with symbols and symbols that will greatly assist students and teachers in using the E-module. Acknowledgments, the advantages of E-modules, limitations of E-modules, and other things that are considered important are also contained in the E-module which aims to help users of the teacher and student E-modules.

3.2.3. Learning Support

Presentation of material in the E-module The E-module of Science for High School Elementary School clearly places students as learning subjects. Assignments, exercises and forms of activities contained in the E-module Science E-modules for High School Elementary Schools in particular display more activity-based tasks, meaning that students do not only asked to listen and read and then do assignments, but the forms of activities such as searching, finding and solving problems are also widely seen.

3.2.4. Coherence and Coherence of Thoughts

Submission of material between chapters with adjacent sub-chapters reflects the coherence and relevance of the content. The material presented in one chapter has been seen to reflect the unity of meaning and shows the continuity of meaning so as to form a unified whole meaning.

3.2.5. Layout

The layout display of the E-modules for the High Grade Elementary Science E-modules can be said to be good and attractive for students. The layout size is in accordance with the standard E-module size, with an attractive cover design and can describe the entire E-module.

3.3. Language Eligibility

3.3.1. Accuracy

The sentences used represent logical textual content and refer to the Indonesian sentence rules contained in the general Indonesian spelling guidelines. The language used is straightforward and in accordance with the thinking abilities of elementary school students.

3.3.2. Communicative

Messages are presented in interesting language, easy to understand, communicative, and encourage students to read thoroughly. The use of language that is difficult for students to understand is not seen in the E-module of the Science E-module for High School.

3.3.3. Conformity of Language Rules

The sentence structure used in the Biology Basic Concepts E-module uses the required rules in Indonesian which are in accordance with general Indonesian spelling guidelines. All the writing contained in the E-module, be it the use of letters both refer to the correct Indonesian grammar rules.

3.3.4. The Suitability of the Development of Students

The language used in explaining concepts and materials is in accordance with the development of students, especially at the elementary school level, besides that it is also in accordance with the level of emotional maturity of students. In addition, the tasks and exercises contained in the student E-module provide opportunities for students in particular to encourage students' curiosity about the various problems they encounter in their lives in the school and community environment.

The trial was conducted with the aim of seeing the effectiveness of the Basic Biology E-module in providing an understanding of the material concepts contained in science lessons to users of this Biology Basic Concepts

E-module. The trial was conducted on PGSD class F 2018 students, Faculty of Education, State University of Medan. The number of students who were sampled in this activity were 35 people, with the number of questions given as many as 20 questions. The results of the trials carried out showed that the use of the E-module Basic Biology Concepts developed by the researchers proved to be effective and able to provide a good understanding of science learning at the elementary school level.

Of the twenty questions given, almost all of the questions can be answered correctly. There are only a few questions that cannot be answered correctly. The description of the results of experiments conducted by researchers on the effectiveness of the developed Biology Basic Concepts E-module can be seen in the following table:

Table 2. Test results of E-module basic concepts of biology

No Soal	Frekuensi Jawaban Siswa				Ketuntasan
	Salah	%	Benar	%	
1	1	2,86%	34	97,14%	Tuntas
2	3	8,57%	32	91,43%	Tuntas
3	2	5,71%	33	94,29%	Tuntas
4	1	2,86%	34	97,14%	Tuntas
5	2	5,71%	33	94,29%	Tuntas
6	1	2,86%	34	97,14%	Tuntas
7	1	2,86%	34	97,14%	Tuntas
8	2	5,71%	33	94,29%	Tuntas
9	0	0,00%	35	100,00%	Tuntas
10	1	2,86%	34	97,14%	Tuntas
11	1	2,86%	34	97,14%	Tuntas
12	2	5,71%	33	94,29%	Tuntas
13	0	0,00%	35	100,00%	Tuntas
14	3	8,57%	32	91,43%	Tuntas
15	2	5,71%	33	94,29%	Tuntas
16	1	2,86%	34	97,14%	Tuntas
17	2	5,71%	33	94,29%	Tuntas
18	1	2,86%	34	97,14%	Tuntas
19	1	2,86%	34	97,14%	Tuntas
20	0	0,00%	35	100,00%	Tuntas

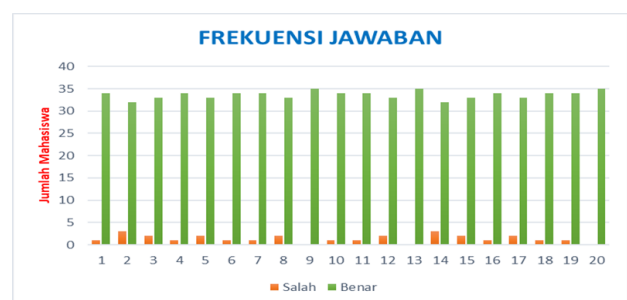


Figure 3 Test results of the E-module Basic Concepts of Biology.

Based on the data above, it shows that the 20 questions that were tested on 35 PGSD students who were the samples in this study, were able to answer well based on the E-module of Basic Biology Concepts developed by the researcher. Only on some questions, a small number of students are still wrong in answering them. Overall, the questions presented can be said to have been completely answered by the sample in this study.

Thus it can be said that the E-module The E-module of Basic Biology Concepts developed in this study can improve students' understanding of the Basic Biology Concepts taught at the elementary school level. The e-module of Basic Biology Concepts that has been developed is effective in helping to provide understanding and concepts of science material at the elementary school level which so far have been abstract.

4. CONCLUSION

This study aims to compile an E-module of Basic Biology Concepts that will be used for students of the Faculty of Education (FIP) PGSD UNIMED as a substitute for the dictates that have been used to improve the ability of elementary science education. The results of the validation of the draft E- module Basic Biology Concepts conducted by the validator team consisting of lecturers from universities, show that the E-module Basic Concepts of Biology designed for elementary school levels is included in the good category. The results of trials conducted on 35 PGSD students in class F 2020 at Medan State University showed that students' abilities and understanding of Basic Biological Concepts material increased after lectures were carried out using the E-module of Basic Biology Concepts developed by researchers.

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